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SOUTHERN AVIATION

The Blue Book of Aeronautical Activities in the Southern States

JANUARY 15, 1930

GENERAL L
JAN 27 1930
UNIVERSITY OF GEORGIA

In the South Today

Airplanes	2166
Pilots	2235
Mechanics	1745
Schools	117
Manufacturers	38

Passenger and Mail Lines:

Miles Established	12,000
Miles Proposed	15,000

Airports:

Established	438
Proposed	345

The South Promises to Develop Faster Than Any Other Section in 1930

Volume 1
Number 5
15 Cents per Copy

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GILMORE OIL CO., Los Angeles

A Group of Airport Experts examining surface at Curtis-Grand Central Terminal, Los Angeles, treated by Gilmore Plastic method, using Gilmore Special Asphaltic Airport Oil.

5120

GILMORE SPECIAL ASPHALTIC AIRPORT OIL

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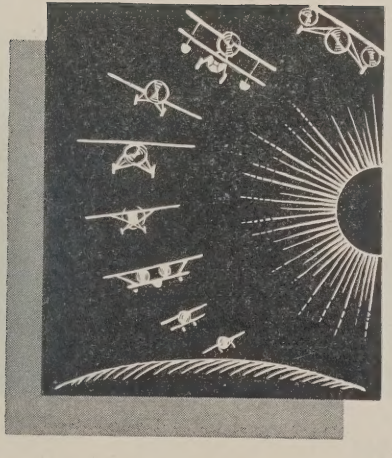
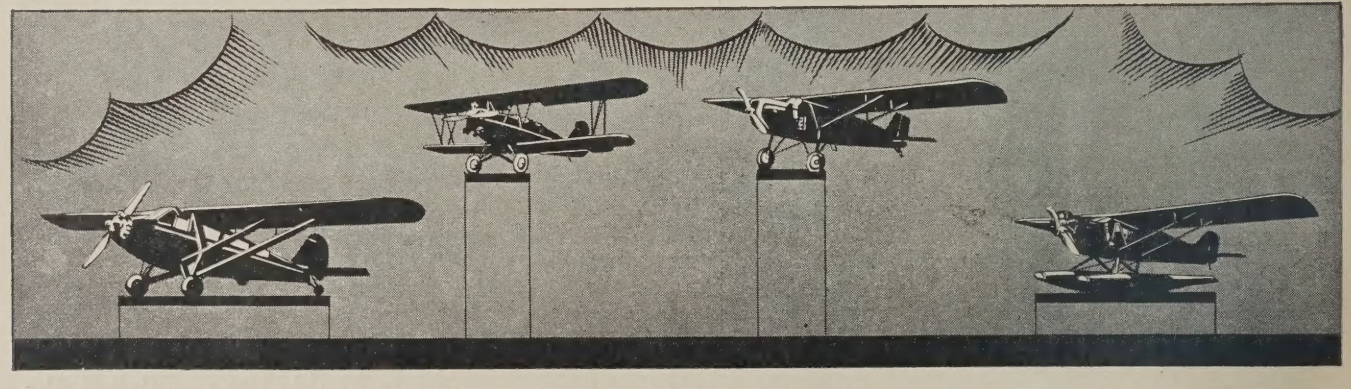


IT SEEMS appropriate at this time to define the present position of the Curtiss-Wright Sales Corporation and to outline its plans for the future. The Corporation is now the sole outlet for the entire commercial aircraft production of these outstanding manufacturers in the Curtiss-Wright group. *Travel Air Company*, makers of one out of every four commercial planes in the United States, builders of 17 types of planes and of the spectacular Mystery ship which outflew every competitive speed plane at the Cleveland Show. *Curtiss-Robertson Airplane Manufacturing Company*, with its Curtiss-Robin three place cabin monoplane, probably the most widely known moderate priced plane for all-round use. *Curtiss Aeroplane and Motor Company*, pioneer builders of airplanes and engines, whose Fledgeling training plane was chosen in open competition by the Navy and is now widely used by commercial flying schools, whose giant twin-motored Condor is the latest luxury in transcontinental

transport ships. ~ *Moth Aircraft Corporation*, whose DH Moth biplane has a brilliant record of over 10,000,000 miles in the air. Easily housed in a one-car garage, the Moth is destined to be the most popular light plane. ~ *Loening Aeronautical Engineering Corporation*, the world's leading producer of amphibian planes, creators of special types for military, naval and coast guard use, makers of the Air Yacht for transport service and of the Commuter, the luxurious craft now favored by wealthy sportsmen pilots. ~ *Keystone Aircraft Corporation*, long noted as producers of large multi-motored aircraft, builders of famous

CURTISS SALES



To build the best Airplanes in their class, regardless of cost, will continue to be the policy of the Travel Air Company. This policy, the wisdom of which has been thoroughly proven, has brought the company from a modest beginning to a position of leadership in the aircraft industry in six short years. Our plant and organization at Wichita, now ready for production on an increased scale, will continue to serve owners and operators. With a distributor personnel fortified by able additions and with the country-wide facilities of Curtiss-Wright service stations and dealers now made available to us, Travel Air's position will be further strengthened.

TRAVEL AIR COMPANY
■
■
■
WICHITA KANSAS

Walter H. Beech
PRESIDENT

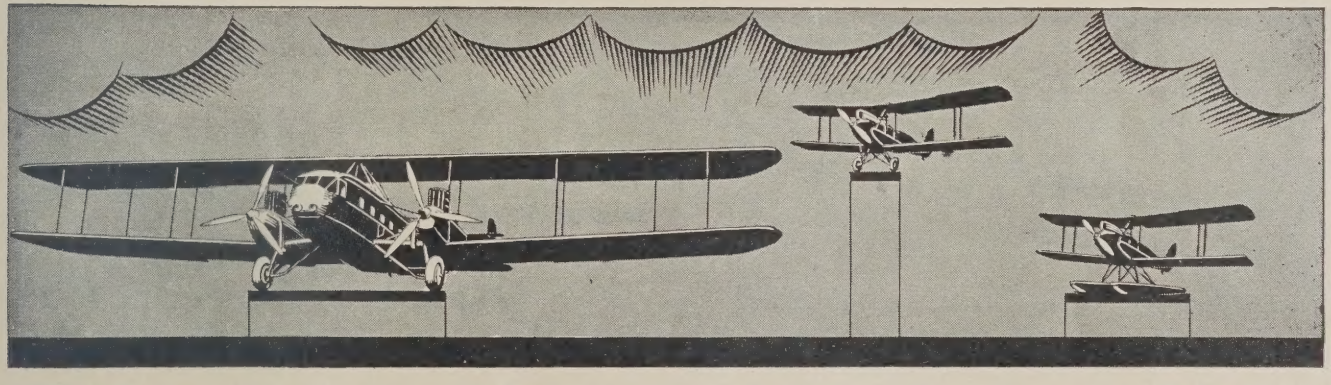
The Curtiss-Robin was widely accepted within a short time because it gives the purchaser more airplane per dollar than any plane in its class. The winning of the world's endurance record and its numerous other achievements proved the basic soundness of the type. Now, with the same fine up-to-date plant that made the large scale production of the Robin possible, we confidently look for even greater results in 1930. And by having our planes and parts distributed and serviced by the Curtiss-Wright group, every ship will carry with it a service guarantee not approached by any competitive line.

CURTISS-ROBERTSON AIRPLANE MANUFACTURING COMPANY
■
ST. LOUIS MISSOURI

Wm. B. Robertson
PRESIDENT

WRIGHT CORP.

army bombers and of the Patrician, tri-motored 18-passenger transport. ~ These Companies, each pre-eminent in its field, will retain their own identities as manufacturing units, will continue under the same able leadership which has brought them to the forefront in the industry. Through the unifying control of the Curtiss-Wright Corporation, their position will be strengthened by the coordination of development work, the centralizing of raw material purchases, the pooling of technical information and research data, the elimination of duplication and waste. ~ Backing their program of development is the largest



I am glad that the products of the Curtiss Aeroplane and Motor Company are now to be carried into the field of commercial aviation by the Curtiss-Wright Sales Corporation. We hope to serve the public through this new organization as faithfully as we have served the Army and Navy, where for twenty years Curtiss planes and motors have always done their bit.

CURTISS AEROPLANE AND MOTOR COMPANY
■
■
GARDEN CITY NEW YORK

VICE-PRESIDENT

The Moth Aircraft Corporation has become the light plane division of Curtiss-Wright. We will carry on with all distributors and dealers who have handled our products in the past. To these dealers and their customers, will be available over one hundred Curtiss-Wright service stations throughout the country, in addition to existing Moth stations in the United States, Canada and foreign countries.

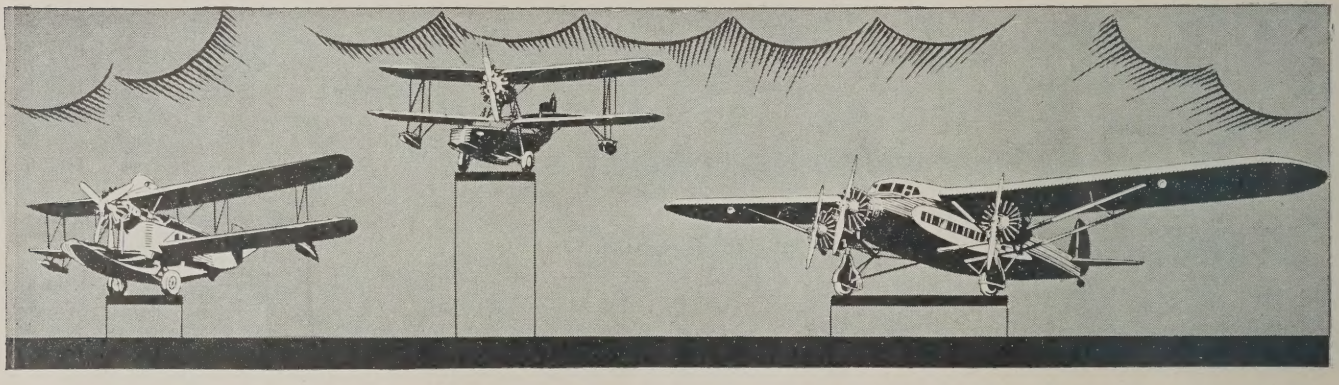
There will be no change in policy, but all contracts for sales will be made through the Curtiss-Wright Sales Corporation, who will represent us throughout the world. I believe that this set-up offers to dealers, as well as Moth owners, a service and an economy which cannot be approached by any other light airplane producer in the United States.

MOTH AIRCRAFT CORPORATION
■
■
■
LOWELL MASS.

PRESIDENT

aviation enterprise in the world with a capital amounting to one-third the total aviation investment of the country. ~ Backing their products is a nation-wide service organization including *Curtiss-Wright Flying Service, Inc.*, which operates 40 flying schools capable of training 10,000 pilots a year. ~ With an array of aircraft covering the entire range of type, style and price, the distributing organization of Curtiss-Wright Sales Corporation faces a world ready and anxious to fly. Aviation activities are now more than doubling every year. Airports, airlines, flying schools, aviation country clubs, are being organized

CURTISS SALES



Keystone-Loening Amphibians, originally developed from the military Loening planes, have taken their place as machines of greatest reliability for both private and transport use, as evidenced by their universal acceptance during 1929. To meet the growing demand for these planes, they will hereafter be built at the Bristol factory of the Keystone Aircraft Corporation, where augmented facilities will permit large production on an economical scale. The distribution and servicing of Keystone-Loening Amphibians by the extensive Curtiss-Wright organization will increase their practical utility to transport operators and private owners.

LOENING AERONAUTICAL ENGINEERING CORPORATION
■
■
NEW YORK CITY

VICE-PRESIDENT

With an established reputation as leading producers of military aircraft and multi-motored transports, Keystone's large facilities have now been practically doubled to permit the production of commercial planes. With a highly efficient organization, we are now producing various types, including the well known Keystone-Loening Amphibians, training planes, and a series of Patrician air liners in quantities that will result in manufacturing economies. Distribution will be handled through the nation-wide sales and service organizations of the Curtiss-Wright Corporation, with obvious advantages to users of our products.

KEYSTONE AIRCRAFT CORPORATION
■
■
■
BRISTOL PENN.

PRESIDENT

WRIGHT CORP.

on all sides. Private planes, licensed pilots, air-traveling passengers are rapidly increasing in numbers from month to month. The time for organized sales and service has arrived. Curtiss-Wright Sales Corporation invites all interested in the new era of aviation to meet the executives of the Corporation at the St. Louis Aviation Show, February 15th to 23rd, to inspect its complete line of aircraft exhibited there and to discuss mutually profitable plans for the future. ~ Complete details regarding the entire line of Curtiss-Wright Airplanes will be gladly supplied from the offices of this Corporation.

WALTER H. BEECH, PRESIDENT

CURTISS-WRIGHT
SALES CORPORATION
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CAROLINA METAL CULVERT CO.
SALISBURY, N.C.

January 15, 1930

SOUTHERN AVIATION

Vol. 1, No. 5

Published monthly in the interests of aviation and all aeronautical activities in the southern states

T. W. McALLISTER, *Editorial Director.*
B. H. VINCENT, NAT M. JOHNSON AND S. R. McGILLIS, *Editorial Staff*

Contents

Opportunities in Aviation 9
Servicing Airplane Motors 12
Flying Activities at Huntington 16
The First Successful Night Flight 17
Development of Aviation in the Old Dominion 19
A 15-Year Task of Charting the Airways 23
The Flying Ambulance from Hampton Roads 24
Mechanical Aids for Testing Pilots 27
The Development of Toney Field 28
Miami's Municipal Aviation Board 30
The World's Largest Airport 31
Putting Over an Airport Bond Issue in Tampa 33
News of Southern Airports and Airways 35
Aeronautical Personalities 43
General News of the Aeronautical Industry 47
New Airplanes and Accessories 55

WHAT are the opportunities for distributors and dealers in the aviation industry. And what are the obligations assumed by the man who signs a contract for an airplane franchise? These questions are answered by one of the industry's leading executives in the first article in this issue—an article which not only indicates the opportunities to be found in aviation sales work in the next few years but tells how to capitalize on these opportunities.

* * *

THE problem of developing the aircraft market will be the keynote of the International Aircraft Exposition, to be held in St. Louis next month. Accordingly, our February 15th issue will not only present the plans and program for this big exhibit but also will present a number of valuable merchandising features. Among these will be several authoritative articles on airplane sales problems, the story of how a well-known southern airplane distributor has cashed in on his opportunities, a description of the methods used by one of the leading air transport systems to build traffic and other features relating to sales development.

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DISTRIBUTORS

Some desirable territories are still open. Write today for facts about the valuable Cessna Sales Franchise, and the profitble opportunity for dealers and distributors in the new Cessna Sales Organization.

Cessna Aircraft Company

WICHITA ✣ U. S. A.

SOUTHERN AVIATION

Volume 1 January 15, 1930 Number 5

The Opportunities *in* Aviation *for* Distributors *and* Dealers

By James Work

General Manager, Detroit Aircraft Corporation

WHERE will the money be made in aviation in the next few years? Such questions are being discussed everywhere, in the smoking car, at the club, at the airports and in scores of business conferences. There seems to be no doubt among well-informed business men that a great deal of money is going to be made in various aviation enterprises in the next five years.

Business has justified this optimistic view by putting well over $1,000,000,000 into the industry in the last three years. However, the average man who is interested in this baby among industries wants to know not only what will bring the greatest returns in the long run, but will pay substantial dividends in the next few years. Many men are also asking what end of aviation they can enter personally without making a huge immediate investment.

Scores of business men and women, as well as business organizations, are making plans to enter into some phase of airplane manufacture or operation. In view of present conditions, it seems somewhat peculiar that the greatest money-making branch of the industry is being largely overlooked by many individuals and organizations.

This money-making branch is the sales end of the industry. Two years ago sales were not a problem; the difficulty was to somewhere near meet delivery dates promised weeks and months back. Today the manufacturer who has neglected the building up of a sales organization during the period of easy sales is finding that production, in some cases, is outstripping sales.

The experience of approximately twenty-six distributors and many times that number of dealers holding sales franchises for one make of plane has proved conclusively that there are large profits to be made from a properly run sales agency, backed by experienced cooperation of the factory represented.

THE accompanying article presents not only the opportunities for actual net profit in airplane selling, but also touches on such important factors as contracts, discounts, commissions, analyis of prospects, and the obligations and responsibilities of the distributor and dealer. The article brings out the fact that it often is possible to enter profitable airplane sales work without any actual cash investment; and that discounts vary in accordance with investment and extent of sales effort.

In considering the organization of a company to enter some branch of aviation, the business man has several alternatives. He may operate a taxi service, a school and other branches of commercial operation from a fixed base, he may start an airline, he may enter the manufacturing end, making either airplanes or accessories, or he may enter the sales field. Some combination of these activities may of course be made, and the organizations making the largest profits today, are devoting their efforts almost exclusively to sales work.

The investment and time required to build up a manufacturing organization make this prohibitive to all but organizations having unlimited financial resources or the control of some prticularly important patent; while the starting of an airline is a slow and costly business, and new lines cannot be expected to show a substantial profit for many years, except under unusually favorable conditions.

Hundreds of companies have been formed in the last few years to enter the commercial operation end of the industry. In many cases a pilot can pur-

chase a single plane, gradually add to his equipment and expand activities from his profits; but there is heavy competition in this line at the present time, and the large profits that were made in recent years in taxi and similar operation work are falling off, as more and more people have taken their first flight. Operators are turning to the training of the hundreds of young men and women for whom the industry has a crying need, but the new Department of Commerce regulations, fortunately, are eliminating many improperly conducted schools, and to obtain the highest rating of the department, a considerable investment is required.

It must not be assumed from the foregoing comments that the writer believes there is no opportunity for new organizations in the fields mentioned, but merely that such operations will require considerable capital and must be entered for future rather than immediate returns.

On the other hand, the sales field has scarcely been touched as yet, and is a branch of aviation that can be entered with little or no capital. Profits of over $30,000 in a single year with a comparatively small investment have been made by several distributors for one make of plane, and this sum is but a fraction of the profits that a well-conducted airplane sales agency should make in future years.

There is little question but that airplane sales franchises will become as valuable as exclusive sales rights to the more popular makes of automobiles within a very short time. Such franchises, offering greater profits than can be made with similar investment in almost any other industry, are being offered by manufacturers in all parts of the country on astonishingly liberal terms.

James Work (left) vice-president and general manager, and E. S. Evans, president, Detroit Aircraft Corporation

Obligations of the Distributor

The requirements that Ryan distributors, for instance, are required to fulfill are typical of contract stipulations of others manufacturers. The distributor is required to purchase a ship which shall be kept available for demonstrations; also he contracts for a certain number of ships per year, and places a deposit against the fulfillment of the contract. The demonstrating ship itself usually shows a profit at the end of the year from commercial operation, leaving commissions on sales practically net.

One Ryan distributor sold ten planes in a period of five months in sales to ten different purchasers. He stated recently that he fully expected his company to show a profit of $50,000 at the end of its first year of operation from sales alone, and this on a total investment of approximately $12,000.

There is certainly no other branch of the industry at the present time where such a showing is possible on such a small capital outlay.

Operators who are trying to show a fair profit on $3 taxi hops, occasional cross-country flights, and other usual services, would do well to consider the possible income from an equal amount of work put into intensive airplane selling.

Airplane sales work actually can be undertaken without the investment of a single dollar, and with the assurance that a properly conducted campaign will bring returns greater than in other branches of commercial operation. The airplane distributor usually contracts for a state, part of a state and, in certain sections of the country, larger territory. It is practically impossible for one organization to cover this territory effectively, so the distributor usually appoints dealers in every city and section where there are potential prospects.

The dealer who has one competent man devoting his whole time to sales work can be assured that sales will result. Arrangements can sometimes be made so the distributor will make all demonstrations in the latest model plane, and it is not necessary that the dealer contract in advance for a certain number of planes. Naturally he does not receive as large commissions as the distributor, who carries the responsibility for developing the territory, but by such means the dealer can test the advisability of going into sales work on a larger scale.

Behind the sales work of the dealer and distributor is the cooperation offered by the factory. A typical company has factory sales representatives covering every section of the country. These men assist the distributor in building his dealer organization, make demonstrations to likely prospects, and aid in closing sales, in addition to helping the sales organization to plan an effective campaign. The dealers and distributors receive full commission on all sales developed by these factory men.

Although hundreds of commercial operators hold airplane dealer and distributor contracts, few of them have realized the value and necessity of selling airplanes intensively as the more expensive automobiles are sold.

Several sales organizations, however, have begun to apply intensive sales methods in selling airplanes and the results have far exceeded their expectations.

While commercial operators as a whole have been slow to apply effective sales principles to the airplane industry, it is interesting to note that many successful business men in other lines have realized

The photograph at the left indicates the increasing popularity of the airplane for use by sportsmen. Below is a plane used for business—a Ryan Brougham owned by the Standard Oil Company of Ohio which permits officials to save much time in holding business conferences in widely separated cities over the country. Such use of planes will multiply in the next few years.

the opportunity that effective sales work in the airplane field offers.

More than half of the new dealers and distributors appointed by one leading manufacturer in the last few months, have been companies organized by men who had long records of achievement in other industries behind them. One of the most successful of these men was the president of a large coffee company, another was the manager of an automobile agency, one was a successful real estate salesman, and another of these firms was organized by the partners of a public accounting agency. It is interesting to note that all these organizations have made an outstanding success.

Building Up Sales Contacts

While the winter season is usually slow for commercial operators, it is the season in which the most effective sales work can be done. The sale of a $13,000 airplane, for instance, is not completed in a week or even a month, but requires many contacts over a long period of time. For example, over one-half of the Ryan sales in recent months have been made to large business corporations. In the great majority of cases these sales required education of all the officials of the company. The organization that starts now to build up these contacts should find that sales profits in the spring will far outstrip the net income from other operations.

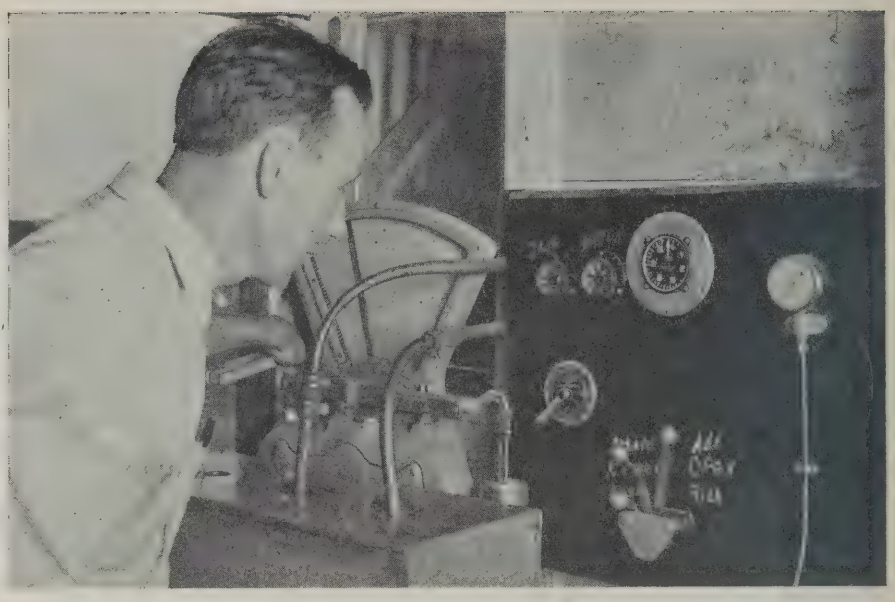
The sales franchises offered by the leading airplane manufacturers are all very similar, with the exception that some discounts are larger than others. In general, commissions to the distributor range from 15 to 25 per cent. The dealer usually makes his arrangement direct with the distributor, and the discounts allowed him vary between five and twenty per cent, depending on whether he purchases a demonstrator, the amount of sales effort he is putting forth in his territory, and whether he contracts in advance to sell a certain number of planes in this territory.

There is a marked tendency at the present time to reduce the territory under the control of distributors, and to require them to put forth more intensive sales work than most sales organizations have shown in the past. It has been found that a small territory, closely worked, will produce more sales than an effort merely to cover already interested prospects in a large area; and no manufacturer wants to have a section tied up indefinitely unless the distributor is showing definite sales results. Some manufacturers reserve the right to have factory salesmen work territory under contract, if a certain number of planes are not sold in the first six months.

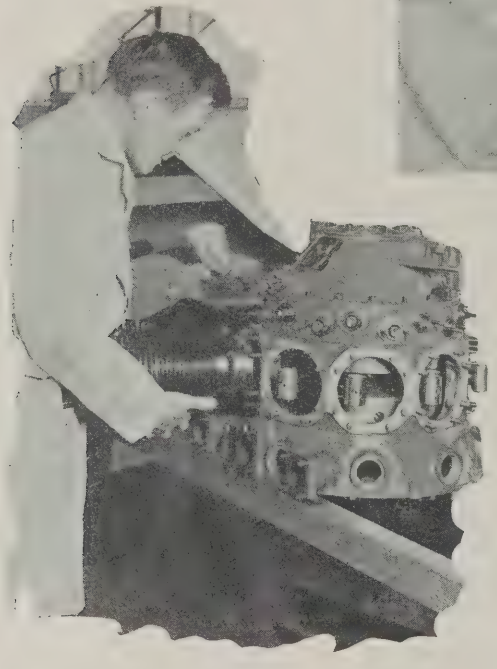
The leading manufacturers and distributors are now attempting to place a live dealer in every town of 10,000 population or over. In many cases these organizations will merely furnish the names of likely prospects, and arrange appointments, but in other cases they will actually close the sale, and their commissions will vary accordingly.

There is little question that the industry as a

(*Continued on page* 18)



Right: Running in an overhauled motor at the Southern Aeromotive shops in Dallas. The overhauled motor is given a six-hour test on the test block and its performance carefully checked by a mechanic, by means of special instruments on an improvised instrument board. Below: Reassembling a Wright Whirlwind motor after a complete disassembly for inspection of parts at the Southern Aeromotive shops.



SERVICING

Another Article in Series on Southern Aeromotive Service

By Presley Bryant

ALTHOUGH both are internal combustion engines and the principle of their operation is broadly identical, there is a vast difference in the repair of automobile and aircraft motors.

This vast difference is measured in thousandths and in ten-thousandths of an inch. The tolerances in dealing with airplane engines are, of course, much slighter, but in addition to smaller margins, there is involved in airplane motor repair the necessity of foresight and divination. There are times when parts should be discarded, although there is reason to believe they will go on functioning for a hundred, two hundred, or perhaps three hundred more hours.

The cost of replacing a worn part is nothing compared to the cost of picking up the remains of a ship, and perhaps of the pilot as well, in the traditional basket. When the automobile breaks down, it can be pushed to the side of the road, pending rescue. When the airplane motor goes bang, the side of the road may be the bottom of a trajectory.

So the boys who work on the vitals of the ships are picked for more than ability to twist nuts and wire them down. They have to know what goes on at upwards of a thousand revolutions after a hundred or more hours of punishing flight. And the best of these boys get to be the air motor shop foremen, inspectors and superintendents.

And when H. B. (Pete) Taylor can get hold of them, they go to work for Southern Aeromotive Service—at Dallas, New Orleans, Atlanta, or some of the seven or eight other motor shops operated by that thriving concern. Pete is the big boss—the G. M.

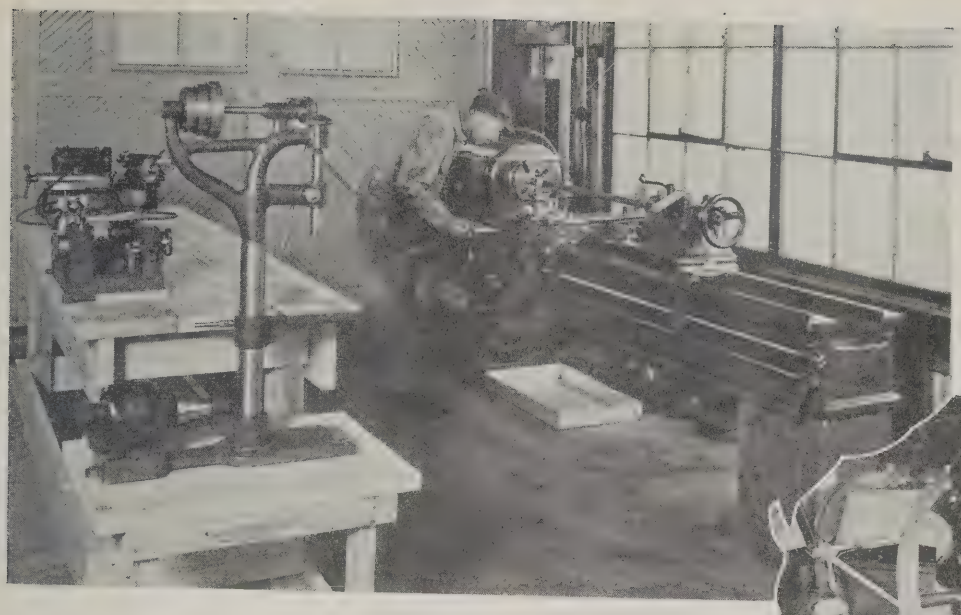
The general manager lives and has his office in Fort Worth, but he has just completed the new main shop of S. A. S. at Love Field, Dallas, and is doing a lot of heavy commuting. In this shop, especially designed for the purpose, is to be found the last word in equipment for overhauling airplane motors and for rebuilding aircraft.

It takes a hundred men to man this shop.

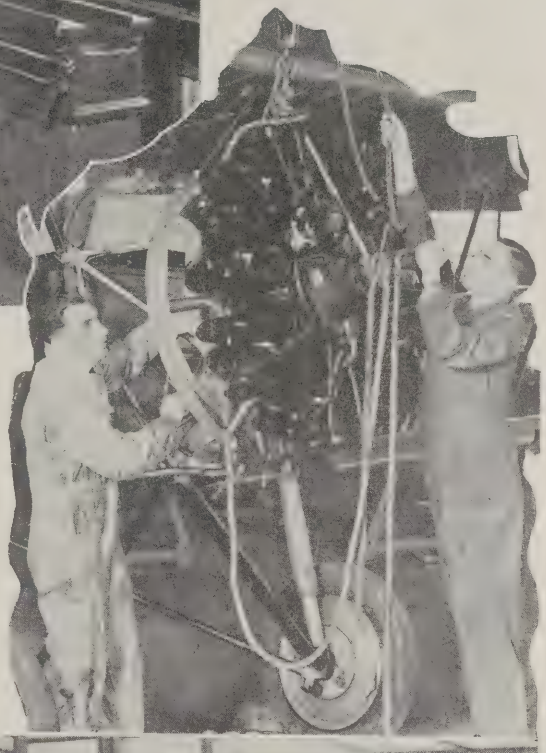
A 50-man shop, but completely equipped, is maintained by the company at New Orleans.

There are smaller shops at Atlanta and at El Paso, terminals of the far-flung lines of Southern Air Transport, subsidiary of the Aviation Corporation and parent of Southern Aeromotive. There are shops at Houston, Brownsville, Amarillo, San Antonio, Waco, Big Spring and Fort Worth, Texas.

At Fort Worth is the parts warehouse, where everything for the airplane, from tires and wing dope to magnetos and altimeters, is on hand, classi-



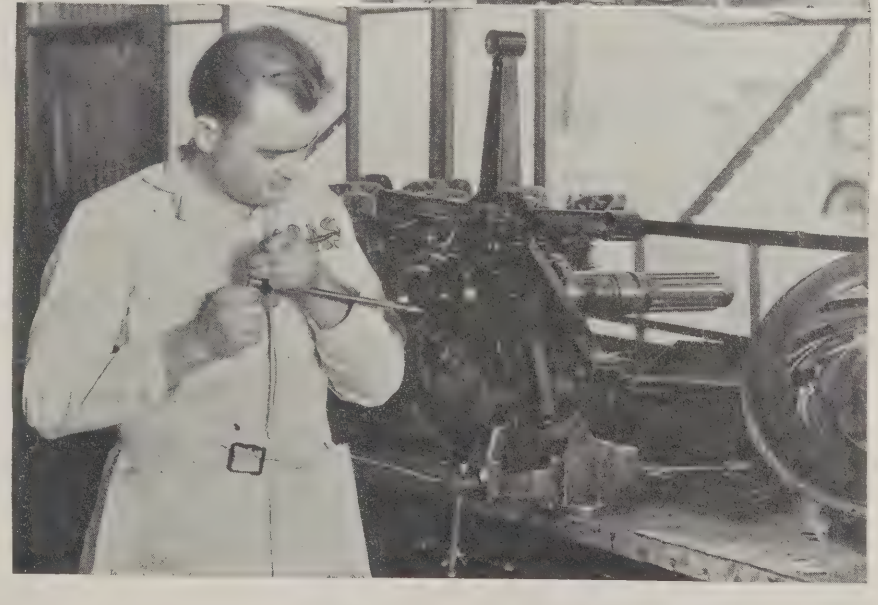
Trimming down a shaft on one of the lathes in the Southern Aeromotive shops. Precision machinery at the shops enables S. A. S. mechanics to eliminate guesswork in engine repair. Below: Installing a Wright motor in a Southern Air Transport mail plane after an overhaul job.



AIRPLANE MOTORS

fied and answerable to a speed system that is dazzling to the customer who wires or phones in a hurry-up order.

The main shop until recently was at Fort Worth, where two years ago Pete Taylor and a helper or two tended the little Texas Air Transport fleet. It has been transferred to Dallas. Parts stocks alone at the new Dallas shop are valued at $60,000. The building, 90 by 190, placed adjoining the S. A. T. hangars, cost about $50,000 to erect. It departs from the high-ceiled hangar type. Low ceilings are provided, to facilitate cleaning and heating.



Disassembling a Wasp motor for a crankshaft repair

The shop, which services from 85 to 100 Southern Air Transport ships, is averaging about one motor a day at the bottom of the winter slump. Four a day can be handled without crowding.

The building is divided into four parts. One section is devoted to motor overhaul. Another consists of test rooms for the motor department. A third is the airplane overhaul workroom and attached are painting and doping rooms.

What is said to be the only instrument repair and maintenance service in the South, including carburetor and magneto service, is provided there. It is headquarters for free compass replacement undertaken by the Pioneer Instrument Company to bring its product up to new standards. Free changes in certain planes desired by the Fairchild Manufacturing Corporation also are made in Dallas.

SOUTHERN AEROMOTIVE SERVICE, INC.

INSPECTION OF MOTOR BEFORE ASSEMBLY

OWNER'S NAME_____
ENGINE NO. _____ MODEL_____ DATE RECEIVED_____ 19__ DATE PROMISED____
Flying time to date_____ Flying time since last overhaul_____
Number of previous overhauls_____ Was logbook received with engine?_____
General condition when received_____

Reason for return to factory_____

EQUIPMENT RECEIVED WITH ENGINE

Starter cover plate_____ Carburetor Elbow_____
Starter: Type_____ Make_____ Serial No._____ Spark Plugs_____
Fuel Pump: Type_____ Make_____ Serial No._____ Alemites_____
Fuel Pump Cover Plate_____ Uniflows_____
Gun Drives: RH_____ LH_____ Oil Drain Pipe_____
Gun Drive Cover Plates_____ Oil Suction Pipe_____
Propeller Hub_____ Booster Terminal_____
Propeller Nut Inner_____ Outer_____ Ground Terminal_____
Carburetor Controls_____ Standard_____ Special_____

Air Heater_____ Air Cleaner_____

SPECIAL EQUIPMENT_____

RECEIVED SHORT:_____

RECEIVED IN: Standard Domestic Box___, Standard Export Box_____, Standard Cradle_____, Customers Cradle_____, Customers Box_____, Customers Crate___

MAGNETOS: MAKE AND TYPE_____ CARBURETOR: MAKE AND TYPE_____
Numbers: R.H._____ L.H._____ Number_____

DATE ENGINE CHECKED IN_____ 19___, CHECKED IN BY_____
AFTER DISMANTLING: Type of Starter Dog,_____ Bendix Spline_____
Inertia Ratchet_____ None_____
OTHER PARTS FOUND MISSING AFTER DISMANTLING_____

GENERAL CONDITION INSIDE OF ENGINE BEFORE CLEANING_____

The aircraft plant deserves a special chapter, to be published later.

In the motor shop, activities revolve around the painstaking inspectors.

When a motor is shipped in or pulled for overhaul in the hangar, it goes to what G. M. (Pete) Taylor calls a "disassembly bench" and is resolved into its elements; that is, completely knocked down.

Thus made piecemeal, the motor's parts are divided, those of iron and steel going to a cleaning bath of water and lye, those of aluminum to a gasoline wash. Then all are stacked on a carriage built to accommodate an entire motor in a honeycomb of shelves and compartments and wheeled to the inspection bench.

At this inspection station, the heart of the overhaul, every part of the engine is micro-measured for wear and minutely examined for flaws and defects. All steel parts are particularly scrutinized for tell-tales of crystallization with the aid of a magnifying glass.

The means is adequate, since crystallization always begins from the outside, its progress, in a sheared shaft, being marked by rings suggestive of the growth rings in a tree trunk.

If for any reason a part does not show nearly perfect condition, it is discarded by the inspector and a requisition for a new part entered.

The carriage does not move from the inspection bench to the assembly line until all defective and worn parts have been replaced; until all bearings needing relining have been fitted in the machine shop.

On the assembly line, where the fastest time of the entire overhaul operation is made, each step of putting the motor back together is carefully checked.

With the motor goes the exhaustive report of the inspector, showing the conditions of every part, whether accepted or rejected and replaced.

"Tolerances for wear are close," Taylor said, in describing the work of the inspectors. "As a rule a couple of thousandths condemns a part.

"As a matter of fact, the inspector's work is against clearance tables, varying somewhat for different motors, and varying, of course, for different parts. Most of these clearances have been memorized.

"Everything accepted for reassembly must be nearly as good as new. A part might be good for 100 hours; it might be good for 200 hours; but if it wasn't certainly good for much more service than that, there is too much risk that it would let the ship down at an inopportune if not impossible moment."

Taylor declared that Southern Air Transport has found it advisable and economical to overhaul after each 250 hours and, as a result, is operating ships now whose engines have gone more than 3,000 hours.

"At the end of 250 hours," he explained, "a motor may not need a lot of parts, but it is sure to need cleaning and inspection. We often find in this way parts that could not possibly have gone another 100 hours.

However, in our catering to the general flying public we often get motors that have gone 500 hours between overhauls and are giving good service."

Since the fall of 1927, when Taylor began servicing Texas Air Transport ships, later taken over by S. A. T., the organization never has lost a motor.

"We didn't have the tools and the test blocks and had to test overhauled motors in the ships," he said, "but we went the limit from the very start. We never recommend a top overhaul to our customers. There is only about a hundred dollars' difference in price, and all conceivable difference in safety and service."

Systematic Testing of Motors

It takes two men one day to assemble the motor. From their hands it goes to the test block and is run for six hours continuously.

"The engine will turn as freely on the test block, after assembly," Taylor remarked, "as it will at the end of 100 hours of flying.

"If there has been the necessity of bearing replacement, the shaft and connecting rod, for exam-

ple, have been sent to the machine shop and the new bearing installed and fitted to the proper clearance. There is no 'burning in' of bearings."

When the motor is assembled and before it is mounted on the test block, the same inspector who prescribed for its ailing parts, inspects all clearances, magneto points and the timing.

A mechanic trained in the work presides over the test block.

First the motor is furnished with a "club," a specially designed 4-bladed propeller so calibrated as to show horsepower at given motor speed. The "club," of course, is also used to hold down the speed to be developed and to drive air over the engine to cool it.

During the first hour the motor is run at practically idle speed.

In the second hour it is throttled up to between 600 and 700 r. p. m. The third hour passes with the motor making 700 to 800; the fourth hour, 800 to 1,000. During the fifth hour it will make from 1,000 revolutions to its maximum speed at intervals, the maximum speeds lasting for perhaps five minutes at a time. But during the sixth and final hour on the block the engine is run wide open.

ENGINE INSPECTION REPORT

Form # 57 — After Final Test — Motor #

Motor Model — Job #

1. Check shipping instructions for additional requirements and get same from stockroom. (a) Fuel Pump_____Prop.Hub_____ Starter_____Extras_____
2. Check disassembly report for Penalty Final replacements and check Final test sheet for oil leaks
3. Remove propeller hub and relap taper bore if necessary.
4. Inspect spark plug terminals.
5. Inspect ignition wire manifolds and intake pipes for dents.
6. Inspect exhaust port studs and replace damaged ones.
7. Assemble priming system.
8. Add two wooden plugs to rear section.
9. Check faces of rear section for fit and mutilations.
10. Remove oil strainer and clean; safety wire cap, and replace brass plug in cap if necessary.
11. Tighten all accessable nuts and bolts.
12. Check magneto, safety wire magneto advance rods at advance end, making sure first that both magnetos synchronize. Add insulated rubber caps and switch terminals where missing; add indicating numbers on distributor blocks; add safety pins.
13. Remove plate on rear section; inspect oil baffle; add hand-starter if called for, or replace plate.
14. Assemble fuel pump if called for.
15. Remove spark plugs, and inspect for spark and condition.
16. Remove rocker box covers.
17. Check freeness of rockers; remove and repair any tight ones.
18. Check valve tappet clearance to .010"
19. Check rocker adjusting screws and lock screws for tightness.
20. Check valve for broken springs and rocker supports.
21. Replace rocker box covers, and safety wire.
22. Replace lead plugs in cylinders.
23. Check for damaged fins on cylinders.
24. Check lock wires on carburetor, if they have been disturbed; check jets.
25. Grease valve rockers_____
26. Wash engine_____
27. Re-enamel where necessary_____
28. Put on Propeller hub nuts_____
29. Inspect and add weight_____
30. Deliver to Packing Dept._____

Date:_____ Inspector_____

Test readings are taken every half hour, from the time the motor is started on the block. These include fuel and oil consumption and maximum horsepower. The horsepower is computed from revolutions attained, in connection with barometric pressure, since when the pressure is high the speed maximum is reduced.

Barometric readings are taken from an aneroid barometer, part of the test block equipment.

Instruments Used in Motor Tests

Almost every conceivable instrument is attached to the block. One, an air speed indicator, is regularly used to see that sufficient air is driven upon the motor to cool it. An electric pyrometer is fitted with a clamp so that it can be applied for readings to any part of the motor, to a flange or port, to give a large field of temperature readings.

Manometers are used to measure the vacuum of intake manifolds and to measure the suction of exhaust manifolds.

The test mechanic takes the temperature of the air and of the oil going in and coming out of the engine. Consumption of the oil is determined by computing scales on a tank, to which the oil is pumped.

During the test, full details of its showing are entered on a triplicate report form. The original of this report goes out with the engine. The duplicate is sent to the main office and the triplicate is kept on file in the test room.

After the test run all valve clearances are rechecked, as are magnetos and carburetors. Spark plugs are removed and examined for fouling and point clearance and if satisfactory are then safetied.

The entire motor and all connections are painstakingly scrutinized for gasoline, oil and water leaks.

Left and right magnetoes are synchronized. Oil strainers are cleaned.

The mechanic who took the readings then signs the report. The inspector goes over the report and signs it. It must then be accepted or rejected by the shop foreman. Each of these men, checking back over the motor, insures against oversights.

Although Southern Aeromotive Service does little top overhauling, its activities are by no means confined to complete motor overhauling. A large volume of small jobs is constantly pouring into the shop, much of it from airplane mechanics who cannot or do not have the facilities to do certain work. For instance, few can ream master rod bearings, and many such jobs are sent to S. A. S.

When desired, the Dallas and New Orleans shops of S. A. S. send shipping boxes to those who wish to send their motors in for repairs. Wherever possible, because of special equipment and facilities, it is urged upon customers of the company that they bring or send their motors to these two shops, although overhauls can be done in the smaller stations.

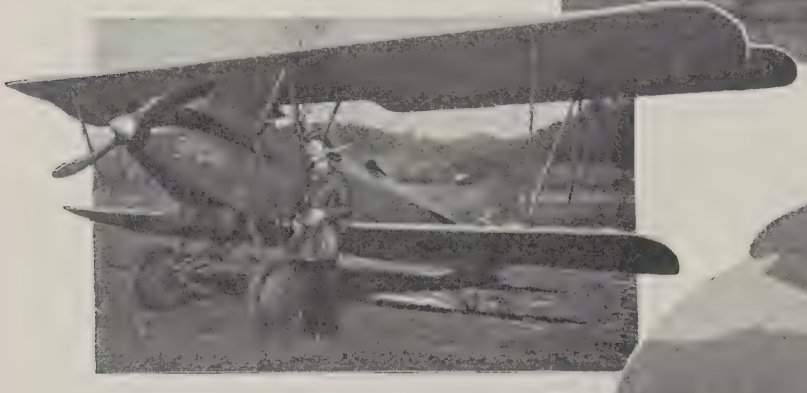
(*Continued on page* 34)

Glimpses of Flying Activities at the New Huntington, W. Va., Airport

On the line at the dedication of the Huntington, West Virginia, airport, in September. A crowd estimated at 100,000 persons visited the airport during the dedication ceremonies.

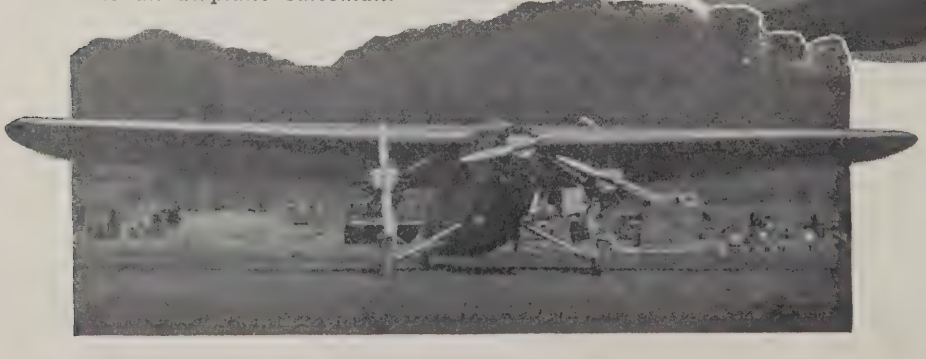
Left: This new Fairchild cabin monoplane arrived at the Huntington airport in time to take part in the opening ceremonies. It is available for daily sightseeing trips.

To the right: A Ryan Brougham owned by the Embry-Riddle Company since 1927. This Ryan is an exact replica of Lindbergh's trans-Atlantic plane. It has carried approximately 4,100 passengers.



To the left: W. O. Davis and his Travel Air biplane in which he does commercial flying from Huntington.

To the right: Okay Bevans, his plane, and his dog "Strut." Mr. Bevans says that "Strut" is the most air-minded dog in the world, with more hours than the rest of the dogs combined. Mr. Bevans is an airplane salesman.



To the left: This tri-motored Ford plane is another veteran in the service of the Embry-Riddle Company with some 1,000 hours in the air. It has carried over 6,000 passengers without a mishap. All of the above photos are by Norman de Graeme-Fowler, of Huntington.

An air-minded crowd at the Wright Brothers hangar at Montgomery in the spring of 1910.

The First Successful Night Flight *and First Aviation School*

By Robert H. Brown

MONTGOMERY, Alabama, claims not only the distinction of being the site of the first successful night flight but also the location of the world's first aviation school.

According to records dug up there, the first successful night flight was made on Wednesday night, May 25, 1910. One other flight had been made at night previous to then but it had been called unsuccessful.

And the first aviation school was established there about March 19 of the same year by the now famous Wright brothers, according to the records of an aged copy of a Montgomery newspaper.

Why the Wright brothers chose Montgomery as the site for the school remains unknown, except for a remark made one day in a hotel lobby by one of the brothers. He declared that Montgomery was far enough south to provide year-around flying weather. So that seems to be the only reason why they selected Montgomery.

On March 19, W. R. Brookins, of Dayton, Ohio, J. W. Davis, of Colorado Springs, Colorado, and Charles E. Taylor came into Montgomery for the first time. They were just youths then and when they made known the purpose of their visit—well, it was just too bad for them. The people of Montgomery ridiculed them. However, the plane had been shipped ahead and had already arrived.

Five days later, March 24, Orville Wright arrived and assumed charge of operations, and along with him came Spencer Crane.

This group of young men was later joined by A. L. Welch, of Washington, and Archibald Hoxsey, of Pasadena, Calif.

So they set out to find a field for their operations. It happens that they chose a field which is now part of Maxwell Field, an army station, which is being developed into the largest aviation tactical school in the country.

A wooden shed was, fortunately, already on the field and this they used as a hangar, or what was then known as a "shack."

All went well for a while, except for the people and their horses and buggies. Difficulty was experienced in landing and taking-off because horses were allowed on the field.

Now then, for the sake of the people who swear that women are wilder today than yesterday, let's take a look at the following excerpt from the Montgomery Advertiser, of April 22, 1910:

"Mr. Wright remarked that numerous applications have been received from women desiring to fly but admitted that a deaf ear had been turned to their appeals to learn the art. The reason given by Mr. Wright for not teaching women is that most of the applications from members of the fair sex were made for the purpose of obtaining notoriety. While Mr. Wright is not prejudiced against the gentler sex, he has attempted in as polite a manner as possible to let them know that neither his brother (Wilbur) nor he is conducting a circus or show."

When Brookins had learned to fly, Wright put him in charge of the school and returned to Dayton. The field was abandoned on May 29.

A newspaper story then admitted: "They left Montgomery Saturday, taking with them the areoplane, and the aviation days of Montgomery are over for awhile."

Now, then, about the first successful night flight.

It seems that Brookins and Arch Hoxsey were getting thoroughly disgusted and impatient with the weather. The days were terrible but the nights were a little better for flying. They hadn't had the ship up for days, and so they decided they'd take it

Orville Wright and his students at Montgomery, Alabama. Left to right: A. L. Walsh, S. M. Crane, Orville Wright, Walter Brookins, James Davis and Archibald Hoxsey

at night. And that's what they did. That was on May 25, 1910.

Records, however, show that this was not the first night flight, but it is believed to be the first successful one. A pilot by the name of Paulhan, in England, had landed his ship just after dusk but it was not considered a night flight.

But when the people of Montgomery, aroused from their sleep saw the queer contraption sailing through the skies that night—they knew what it was, for everyone around Montgomery had heard or seen the plane—they laughed and went back to bed, telling one another what a scatter-brained group of folks those youngsters were.

Airplane Sales Opportunities

(*Continued from page* 11)

whole has not made the effort that should have been made, to develop new markets for airplanes. The spectacular side of aviation has been overstressed to the extent that many executives and business organizations have overlooked the practical usefulness of privately owned aircraft.

There is a great necessity for developing the market for planes both among large corporations and among wealthy individuals who will use planes for business and also sport. It is these markets that have been largely overlooked by the present airplane dealers and distributors. A survey recently completed by one manufacturer shows that approximately 175 business firms now own one or more planes, and that hundreds of others have considered the advisability of such a purchase. In many cases it was found that companies have turned down or postponed the purchase of an airplane, merely because accurate data was not readily available on the cost of operation, safety, reliability, and adaptability of an airplane to their own business.

In an attempt to overcome these objections, the Ryan organization has carefully collected exact figures on the cost of operation of cabin planes from a large number of owners, has assembled figures on the comparative safety of flying, and has prepared surveys of the use that is being made of airplanes by certain industries.

Although such data is very useful, there is nothing that can convince the prospect more than an actual demonstration lasting possibly as long as a week. If the president of a corporation can be persuaded to take a business trip lasting a number of days in a demonstrator, he sees for himself the time that can be saved, the reliability of air transportation, its comfort, the availability of airports, and usually comes home convinced that the company should have its own plane. It is hard for a strange salesman to conduct this campaign of education.

Many operators object to taking the time of a pilot and ship to make a demonstration where a sale is not assured. They say, "We are certain of an income of $400 during that period," but they overlook the fact that such a demonstration may bring from $3,000 to $4,000 if the sale is consummated. The man who has had successful sales experience in other lines, realizes that money must be spent to produce sales, and that is why sales organizations headed by such men have been showing remarkable results.

Any man having an income of over $25,000 and any business firm with dealings over a wide area are splendid potential prospects for airplanes.

On taking over a sales franchise, the factory will give the dealer or distributor a list of live prospects in his territory, but it is up to him to get out and find the people that can use airplanes, sell them first on air transportation and second on the type of plane he is handling.

Before making a decision on what plane or planes should be handled, the prospective dealer, salesman, or distributor should carefully consider all of the following points:

1. Reputation of the plane, both nationally and locally.
2. Its adaptability to the country, considering such points as its ceiling, distance required to take off and land, its cruising range, speed, pay load and construction.
3. Prospect of selling a particular type of plane in his territory.
4. Discounts to dealer or distributor, and net amount to be made on each sale.
5. Whether closed territory is allotted, giving the distributor full commission on all sales made in territory.
6. Help offered by manufacturer, such as the aid of factory representatives, amount of advertising and direct mail work, policy of manufacturer toward dealers, service arrangements and reputation of factory for standing behind its guarantee.
7. Number of planes of that type sold, and number in distributor's territory.
8. Adaptability of plane to either commercial or private use.
9. Financial position of manufacturer, and whether or not a complete line of planes in all classes is available.
10. Appearance of plane, and class of former purchasers.

A busy day at the Richard E. Byrd Airport at Richmond, one of Virginia's finest airports

The Development *of* Aviation *In the* Old Dominion

By C. N. Snead

NEARLY a third of a century ago a man considered as mentally unbalanced completed on the Potomac River, a series of experiments "designed to prove it possible to construct machines giving such a velocity of inclined surfaces that bodies indefinitely heavier than air could be sustained upon it and propelled through it at high speed." But the fates were against him. Langley's failure hastened his death. Nine days after the final trial of the Langley plane was made on December 8, 1903, the Wright Brothers made their first flight in a power-propelled machine, and the conquest of the air was thus achieved.

If Professor Langley could return to Virginia in these days of advancing aviation he would, without a doubt, feel keen disappointment over the apparent slowness of the Old Dominion in catching the spirit of flight and applying it to practical development of the industry within her own borders. I use the word "apparent" advisedly, for what actually is transpiring in Virgina toward real aviation development is far greater in scope of plan and in promise of healthy consequence to the industry than that which immediately meets the eye.

It so happens that Governor Harry F. Byrd, on January 24, 1928, sent the following communication to members of the Virginia General Assembly:

"Appreciating the value of the establishment throughout Virginia of systematic chains of airports, I recently appointed a commission to investigate and recommend a practicable plan to encourage the establishment of airports.

Rear Admiral Richard E. Byrd, Virginia's most distinguished flyer. Photo by courtesy of Virginia State Chamber of Commerce

"For your information I desire to present to you the report of this commission which is self-explanatory. No action is necessary except the approval of the appropriation of $25,000 out of surplus included in the budget now before you. This appropriation is to be used only for the conditioning of airport fields when presented by the locality either by rental or purchase. The expenditure is to be made by the State Highway Department and the equipment and organization of this department is to be utilized so as to most economically do the work of conditioning the airport fields, the Commission to perform this work without cost to the State."

On March 26, 1928, the General Assembly approved an act "to promote the safety of aircraft passengers; to provide for the licensing and inspection of aircraft and the licensing of aircraft pilots; to authorize the State Corporation Commission to promulgate rules and regulations governing the operation of aircraft; and to provide for the issuance of permits for the establishment of airports; and to provide for the supervision of said airports; and fixing penalties for the violations of this act."

The commission which rendered the report referred to by Governor Byrd, consisted of H. G. Shirley, State Highway Commissioner; Harry F. Guggenheim, president of the Daniel Guggenheim Fund for Promotion of Aeronautics, Inc.; R. E. Byrd, distinguished explorer now in Little America, Anarctica; Walter S. Robertson; Junius P. Fishburn, publisher Roanoke Times and Roanoke World News; W. E. Carson; and John Stewart Bryan, publisher of the Richmond News Leader.

Before proceeding further, however, mention should be made of

the airmindedness of the Virginia State Chamber of Commerce which for some years before the passage of an aircraft law by the General Assembly, agitated for development of commercial air facilities within the State.

Less than six months after the appropriation of $25,000 made by the Legislature, the State Department of Highways reported four air fields completed for day flying at Waynesboro, South Boston, Port Richmond and Bristol. In addition there were four fields under construction at Winchester, Petersburg, Richmond and Virginia Beach. There were nine cities which had signed agreements—at Lynchburg, Danville, Roanoke, Blackburg, Marion, Wytheville, Farmville, Lawrenceville and Galax—as well as eight agreements then pending, at Franklin, Front Royal, Warrenton, Colonial Beach, Lexington, Harrisonburg, Culpeper and Abingdon.

The Highway Department furnishes all engineering service and the department's equipment free of cost and $1,000 to each field, the only charge being made is for the actual operation of the equipment and labor. The field and additional money needed must be secured by the interested city.

Virginia's ideal as represented by her present plan of action is aptly expressed by Commissioner H. G. Shirley in the following statement made to the writer:

"When these fields have been constructed there will be a chain up and down and across the State of airport landings in such a way that a pilot will be able to reach one of them if anything should happen to his engine and make a safe landing. Only a few fields are being equipped for night flying and most of them have the approval of the Department of Commerce as to their availability and location."

Probably the awakening airmindedness in Virginia is due more to the exploits of the world-famed Commander Byrd and his equally noted brother, Governor Harry F. Byrd, than to anything else unless it be Lindbergh's memorable flight across the Atlantic. How rapidly public sentiment is getting behind the Governor and his plan for a network of airports throughout the State, may be judged from records on file with the State Corporation Commission.

R. E. Steele, special representative of the Commission, tells the writer that by early in 1930 "there probably will be at least sixty airports in Virginia. At the present time there are thirty-eight airports or public landing fields in operation in the State of Virginia; eight existing airports not in operation, and thirteen airports in the course of construction, or proposed for construction in the near future. The thirty-eight airports in operation at present are classified as follows:

"Municipal airports, seven; State fields, one; U. S. Navy fields, three; U. S. Army fields, two; U. S. Marine Corps fields, one; U. S. Department of Commerce fields, ten; privately owned fields, fourteen. Total, thirty-eight.

"In addition to the above-mentioned regular fields there will probably come into existence this winter and early next spring a number of fields which will be licensed by the Commission for temporary use. These fields will be used in connection with fairs, for exhibition purposes, and for limited commercial use by 'barnstormers.' This class of field will, of course, be available for use as emergency fields throughout the State."

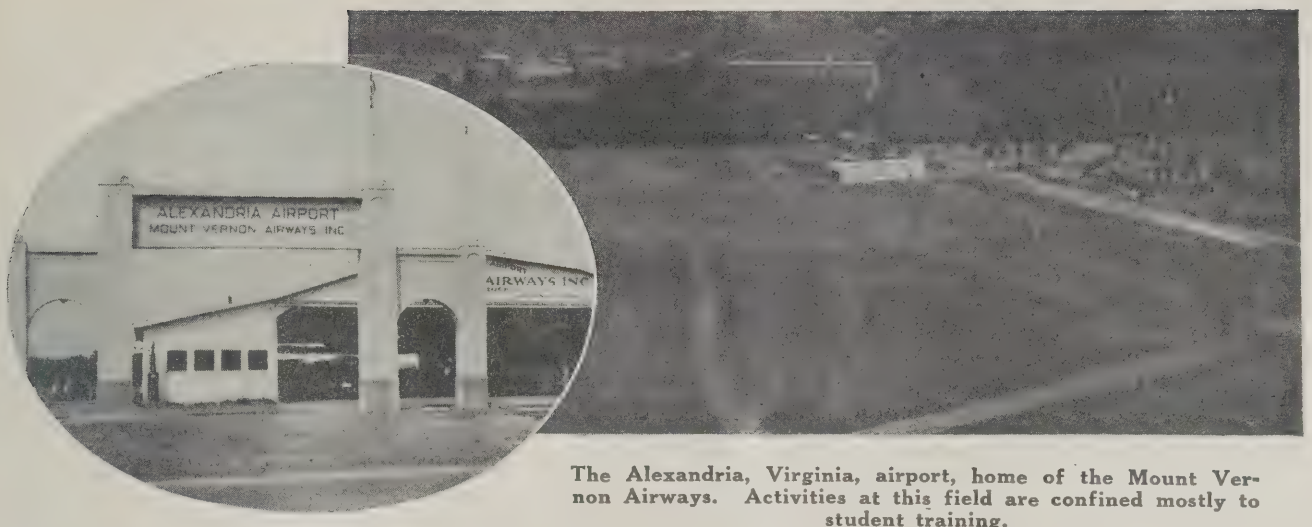
Airport Licenses and Applications

Licenses for airports have been issued already by the Commission to the following: Mt. Vernon Airways, Inc., Alexandria; Washington Airport, Inc., South Washington, Va.; Potomac Flying Service, Inc., South Washington, Va.; George Washington Air Junction, Alexandria; Valley Airport, Inc., Waynesboro, and Temple Airport, Emporia.

Applications now pending before the Commission are as follows:

Pocahontas Air Transport Corporation, Bluefield, W. Va.; Dixie Flying Service, Inc., Charlottesville, Va.; Swoap Field, Farmville; Port Richmond Municipal Airport, Port Richmond; Fastabend Field, near Richmond; Chesapeake Flying Service, Inc., Buckroe

Department of Commerce Intermediate Field number 36, at South Boston, Virginia. This is one of a chain of intermediate fields being established throughout the state



The Alexandria, Virginia, airport, home of the Mount Vernon Airways. Activities at this field are confined mostly to student training.

Beach; Lynchburg Flying Service, Inc., Lynchburg; Pitcairn Aviation, Inc., Richmond; Charles Flying Field, Richmond; Roanoke Municipal Airport, Roanoke; Grand Central Air Terminals, Norfolk; Danville Municipal Airport, Danville, and Central Airport, Richmond.

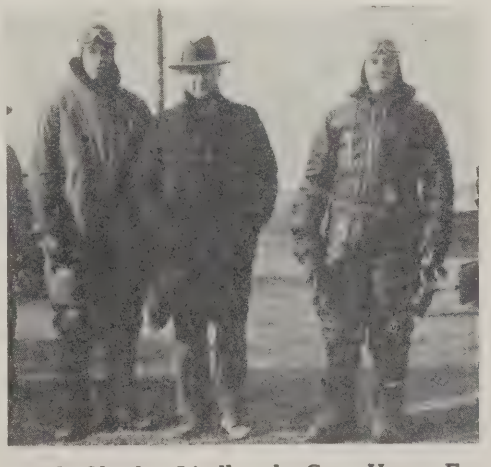
All of these pending applications have been approved by the Commission for the issuance of license, but under the rules of the Commission certain requirements as to insurance, etc., have to be complied with before the actual license will be issued.

Licenses for the municipal airports at Roanoke and Danville have been held up pending decision as to the right of a municipality to operate an airport when such operation is not specifically provided for in its charter.

Richmond's Airport Development

Less than three years ago Richmond, which is rapidly becoming the aviation center of Virginia and a leading contender among eastern and southern cities for the national spotlight, haggled and argued over $35,000 appropriation for an airport. Today the city does not hesitate to pledge half a million for the further development that would be necessary to convert Byrd Field into a gigantic terminal, with facilities for Zeppelins as a network of air lines, radiating in every direction from the landing field of the great liners. Without the slightest quibbling the city has pledged itself to spend the money required in event the Zeppelin interests should select Richmond as the most suitable location for the greatest airport in this hemisphere.

Byrd Field, named for the explorer, Richard Evelyn Byrd, already has been highly developed under the operation of Pitcairn, Inc., air mail line. The field is large enough to accommodate without slightest congestion such fleets of planes as represented by the Ford Reliability Tour; has north-south and east-west runways long enough to accommodate the heaviest trans-oceanic plane, and is equipped for both day and night flying. The field is located about seven miles from the heart of Richmond and is near the historic battlefields of Seven Pines. On the opposite side of the city is located the Charles Field, operated by J. Shelley Charles, distributor of Eaglerock planes. Incidentally Mr. Charles has found aviation a profitable business, having reported profits in one year of approximately $30,000. His field probably is better known among pilots than any other in the entire state.



Col. Charles Lindbergh, Gov. Harry F. Byrd and Harry E. Guggenheim at Valley Airport, Waynesboro, Va., while on a trip through the Shenandoah Valley

At South Boston, a city which enjoys the distinction of being the second largest Virginia municipality on the Atlanta-New York air mail route, the city's airport at present enjoys only the status of an emergency landing field for the air mail planes. Consisting of sixty-five acres it is perfectly level, providing two runways that form a huge "X", 2,200 feet long and the other 2,800 feet, or more than half a mile. The field has been leased by the United States government and lies above high water along the west bank of the Dan River. The lighting equipment consists of a million and a half candle power revolving beacon on a seventy-five foot tower. The entire field is surrounded with white cambrai lights set at intervals of 300 feet while best approaches are marked with green lights.

Recently the State Highway Department completed grading and leveling the runways and sowed grass to keep them in best condition. The Department of Commerce, Airways Division, has let the contract for leveling the area outside of runways so that when completed the entire field will be perfectly level. South Boston is so situated between Richmond

An Army bomber, and a group of officers from Langley Field, on a visit to the Valley Airport at Waynesboro, Virginia

and Greensboro that it is believed the city will be made, at a relatively early date, a regular stop on the air mail line to Atlanta.

Danville grasped the idea of a municipal airport in the early part of 1928 when the Chamber of Commerce appointed a committee to select a site. The committee finally selected a plat embracing ninety-eight and one-half acres three miles east-northeast of the city. The city council agreed to buy the land and develop the field. It is now being completed, complying with government requirements.

There are two runways each 2,000 feet long by 300 feet wide. Funds were recently provided for small hangars and arrangements are being made for filling stations and other equipment, but no plan has as yet been worked out for lighting the field. The field will be known as the Danville Municipal Airport and is located within five miles of the New York-Atlanta air mail line. It is the hope of the city to ultimately have the field tied in as an emergency landing field on the air mail route.

Lynchburg and Roanoke Airports

Lynchburg's Municipal Airport, now under construction, is located about seven miles from the heart of the city, or about four miles from the city limits. It was expected to be completed and ready for operation about the first of the year. Lynchburg already has started a movement looking to the establishment of an east-west air mail route, hoping that Lynchburg will be included.

Roanoke early in 1929 finally decided to acquire a field of 136 acres ideally located for landing and take-off of planes. It was the lack of an airport which helped to influence Pitcairn in choosing a route farther south for the mail line out of Richmond to Atlanta rather than via Roanoke. But realization of that fact stirred city officials to quicker action and the final acquirement of the city's present field. The Roanoke Municipal Airport, when completed, will compare favorably with any in the State.

Roanoke, situated as it is at the entrance to Virginia's "Mountain Empire," the extreme southwest section, serves an unusually large trade area and has good reason to anticipate a glowing future. She is beginning to realize that aviation is destined to play a big part in that future and is moving to become identified on the nation's aviation map. Her Mayor, Charles D. Fox, is an ardent aviation fan, and likewise is the city's most distinguished citizen, former governor E. Lee Trinkle. Both are lending every effort toward making Roanoke's airport just what it should be and in conjunction with Chamber of Commerce officials and City Manager W. P. Hunter, are agitating for the establishment of an air mail line connecting with Cincinnati, Roanoke, Winston-Salem and other southern cities.

That educational centers in Virginia are beginning to realize the importance of linking up with aviation, is demonstrated by the establishment at Charlottesville of the Dixie Flying Service for Charlottesville and the University of Virginia. The school is operated at the new airport about three miles west of the city.

The Dixie Flying Service, Inc., has on its board of directors such men as William B. Scarborough, who is director of Aviation Corporation and Fairchild Aviation Corporation; H. C. Sturhahn, vice-president of William A. Gray & Company, New York City; Anson W. H. Taylor, of Duer and Taylor, New York City; James B. Taylor, Jr., president of Air Associates, Inc., New York City; and Harold F. Gibson, assistant vice-president of the Central Hanover Bank and Trust Company, New York City. Captain Malcolm G. Robinson, formerly acting commanding officer of Loury Field, Denver, Colo., is vice-president of Dixie Flying Service, Inc.

The Charlottesville Airport is considered one of the prettiest fields in Virginia. One runway is 2,000 feet long and 300 feet wide. A second runway, at right angles to the first, is 3,000 feet in length. The property, purchased by the Dixie Flying Service, Inc., comprises 145 acres of most desirable land. The airport is equipped with modern hangars of steel construction, electric plant for the operation of machinery and general repair, and overhauling shop with equipment to take care of private planes of guests and members of the Aero Club which has been organized. Spanish architecture is used for the club house which has an observation tower, dressing rooms and showers for flying students; and chart and operation office besides an assembly and dining room for club members and aviators from other airports.

Numerous towns and cities in Virginia, not mentioned in the foregoing account, have started movements looking toward the establishment of airports. Among these might be mentioned Harrisonburg, Newport News, Pulaski, Martinsville and Bristol. A

(*Continued on page* 26)

Starting a Fifteen-Year-Task *of* Charting *the* Airways

By S. R. Winters

A GROUP of seven map-makers, huddled around tables on the seventh floor of the Coast and Goedetic Survey, Unted States Department of Commerce, is beginning a 15-year job—charting more than 10,000 miles of lighted airways.

With slide rules, pantographs, beam compasses, pen and ink, and a miniature library as a source of information, Uncle Sam's charting crew is now in the process of making the first so-called "U. S. Airway Chart" — delineating a 41,000-square-mile area in the vicinity of Detroit, Michigan. This map, size 28 1-2 by 31 inches, is the forerunner of a total of 82 similar charts, until every village, having a postoffice, will be represented in the bluebooks, figuratively, of travelers of the roads to the sky.

Officials of U. S. Coast and Geodetic Survey preparing to chart the first "U. S. Airway Chart"

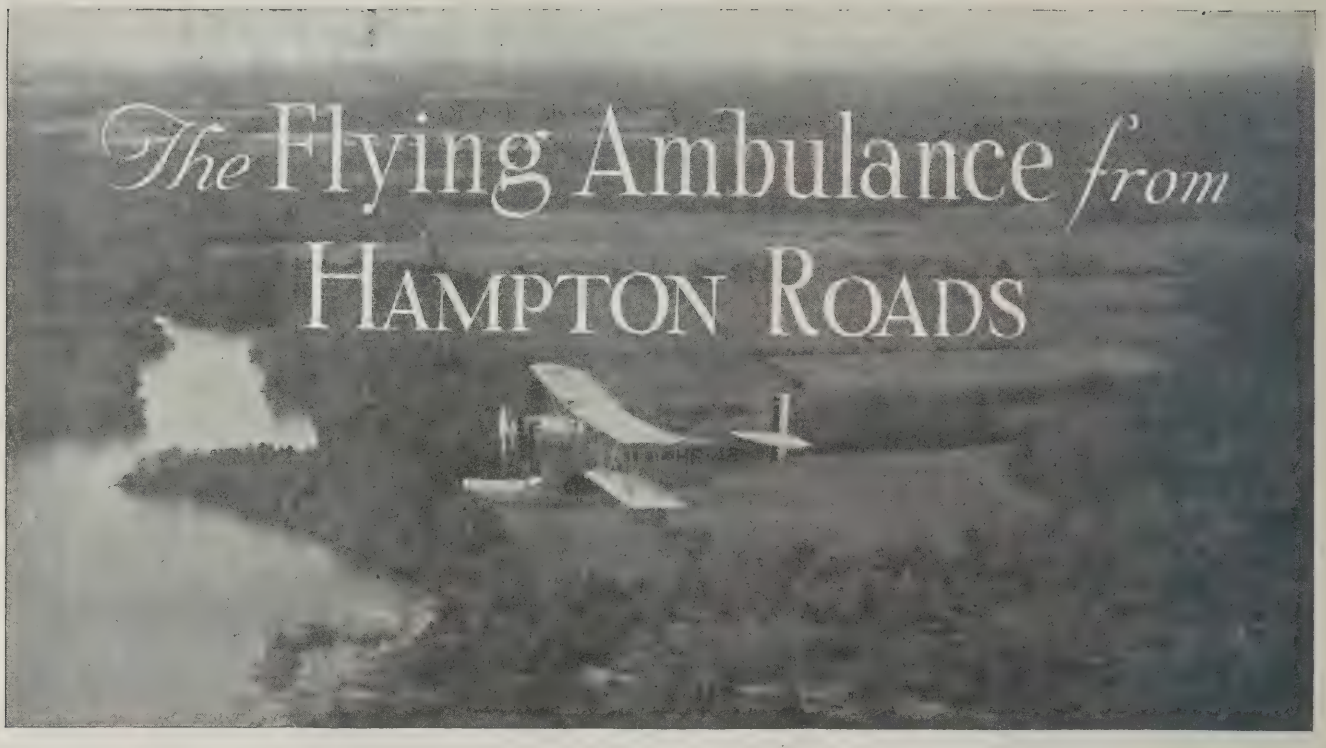
While strip-maps are familiar to airplane pilots — 52 having been supplied the United States Army and 13 the Department of Commerce—the Coast and Geodetic Survey is relegating this form of chart to the background in favor of one whose shape more nearly approaches that of a square. The exact dimension of the "U. S. Airway Chart" is 28 1-2 by 31 inches and the first one of these maps—visualizing an area around Detroit—will extend from latitude 40 to 43 and from longitude 83 to 87. Strip-maps already completed by the Coast and Geodetic Survey embrace an area of approximately 3,000 miles and these "blue-books" of the roads to the sky vary in the extent of their delineation from 100 to 300 miles, with uniform width of 80 miles.

With as much truth as jest, the remark was once made about a rural politician that he knew every hog-path in his district. While the new "U. S. Airway Chart" does not attempt to delineate with such minute detail, it is fairly comprehensive in the ground objects it would visualize. And if you live in a village sufficiently large to support a post-office—though it may be combined with a little country store—your place of abode will not be omitted from Uncle Sam's chart. Towns and cities, highways, railroads, power transmission lines, aids to navigation, such as revolving light beacons and blinkers, radio beacons and landing fields are to be represented and symbolized on the "U. S. Airway Charts." Other than charting the objects on air-lines, these maps will indicate elevations—ranging from 500-foot contours to the highest point in the United States — Mount Whitney, in California, which is 14,898 feet above sea level.

Landing fields—now requiring three medium-sized books to list, and multiplying so rapidly as to defy enumeration—will be identified according to type on the new airway charts. Different symbols will assist the pilot in locating Army and Navy fields, commercial fields, and Department of Commerce intermediate and auxiliary fields. The map-makers are differentiating between revolving beacon lights and blinkers, and the locations of power transmission lines will be identified with respect to the sides of the highways to which they run parallel, for instance. Towns and villages will be represented—excluding only those without post-offices. Highways are to be divided into two classes—first and second—and rivers, lakes and drainage projects will be faithfully noted for the benefit of the sky-travelers. Aids to navigation will not only include lighting beacons, but directive and marker radio beacons—designed to guide the airplane along its appointed course—will be outlined on these government charts.

While, legally, an airway remains to be defined, it will begin to assume form when the Coast and Geodetic Survey completes its 15 years' of mapping—and somebody has estimated that the aggregate number of lighted and unlighted airways in this

(*Continued on page* 34)



The Loening Amphibian, ambulance plane of the Hampton Roads Naval Air Station, over the Virginia Capes

The Flying Ambulance from Hampton Roads

By W. E. Debnam

THE most unusual ambulance service in the United States, and perhaps in the world, is maintained by the United States Navy, at the Hampton Roads Naval Air Station at Norfolk, Virginia—an air ambulance serving the "Carolina banks."

From the base of Kill Devil Hill, highest of the towering sand dunes that dot this narrow strip of semi-barren land lying off the North Carolina mainland, on December 17, 1903, the Wright brothers launched their first airplane.

Today, twenty-six years after, it is eminently fitting that anxious husbands and fathers, residents of the "banks" country, who in the days of their youth thrilled or scoffed at the efforts of those "two mad bicycle mechanics from Ohio" should wander away from the bedside of ailing loved ones to strain eyes and ears for sight and sound of mighty motors roaring overhead, announcing the arrival of medical aid and the flying ambulance from Hampton Roads.

The "banks," bounded on one side by the rolling Atlantic and the other by the placid waters of Currituck and Pamlico sounds, are peopled by as independent a race as lives in the world today. Fishermen all, with the exception of government employes who man the lighthouses, the crows of the Coast Guard stations that dot the "banks" at five and seven mile intervals and the men of the naval radio compass stations at Cape Hatteras, Cape Lookout and Poyner's Hill, the residents of the "banks" in almost every instance take their livelihood from the waters of ocean and sound. By virtue of their isolation—they are more than a day's travel by boat from the nearest city on the mainland and the section is so devoid of roads that the owners of the few automobiles there pay no auto license tax—have learned to depend upon their own devices in most of human stress.

There are occasions, however, when they are in desperate need of help from the outside—and quickly. The stork may be fighting a headwind of unexpected complications, or some case of pneumonia or fever or any one of the other thousand and one ills to which man falls heir may have suddenly taken a turn for the worse that carried the patient far beyond the reach of the slender lifeline of the local practitioner. It is then that the "banker" throws aside his pride in his own strength, calls for aid from the outside and the nearest radio station sputters out its request for the ambulance plane.

The message, picked up at the radio receiving station at the Hampton Roads Naval Air Station, is no sooner received than the specially-constructed Loening amphibian ambulance ship, held always in readiness for such emergencies, waddles out of its hangar and down the runway to the roadstead, tucks its rubber-tired "feet" back under its sides and, gaining speed as the pilot "gives her the gun," roars away into the wind to rise from the water a moment later and go soaring southward on its mission of mercy.

The ambulance service to the "banks" was inaugurated eight years ago and since that time more than 100 trips have been made to bring stricken residents of that isolated section to Norfolk hospitals. As a result of this service today scores of little children are alive and well who otherwise might never have breathed, the pride of mothers literally flown out of the Valley of the Shadow of Death by

the Navy, fishermen are going about their work who would otherwise have long since filled a lonely grave and doughty members of the Coast Guard are living to hurl their lifelines into the teeth of raging storm and send their lifeboats bounding through a pounding surf to the rescue of shipwrecked mariners.

In every instance save one the air ambulance has brought its patient safely to Norfolk. As a result of this one exception, there is imbedded in the wall of the Hampton Roads Naval Air Station hospital a simple bronze tablet bearing the name: "Phillip Schuyler Gavin."

A Story of Remarkable Heroism

Back of that name is a story of heroism and of service on which volumes might be written without giving full justice to the three enlisted men of the Naval Air Service who lost their lives in a valiant effort to save that of the sick boy who perished with them.

On the morning of December 23, 1926, a radio message received at the Hampton Roads station stated that the son of a fisherman living at the little settlement of Buxton on the "banks" 20 miles north of Cape Hatteras was seriously ill of pneumonia and unless he received expert attention would surely die.

The F-5L, a flying boat, one of the first ambulance planes assigned to regular service at the air station, shoved off at once for Buxton. Lieut. W. B. Gwinn was at the controls. With him in the control cockpit was R. M. Keyser, chief aviation pilot. In the forward cockpit were Phillip Schuyler Gavin, chief pharmacist's mate, and A. S. Mainwaring, a chief petty officer. Radioman M. M. Mendenhall and Aviation Machinist's Mate William Mayo were in the rear cockpit.

The trip to Buxton was uneventful. An hour after leaving Hampton Roads the plane landed on the Pamlico sound side of the "banks," taxied to the shore and the sick boy was placed in the forward cockpit with Gavin as attendant. Taxiing the plane off shore and heading into the wind, Lieutenant Gwinn opened the throttle for the take-off. For 200 yards the big flying boat sped across the surface and then, just as she was lifting herself into the air, the accident occurred that an hour later was to claim the lives of Gavin, Mainwaring, Keyser and their patient.

The hull of the plane collided with a fish-stake. Even as the stake tore a great hole in the bottom, the plane leaped into the air. "There was nothing for the pilot to do," says the official account of the incident, "but to continue to Hampton Roads, the safest of landing places, trusting to luck to get her safely ashore."

At the order of Lieutenant Gwinn, Mainwaring radioed a message to the home station, telling of what had occurred, and requesting that launches stand by to take off the patient and crew. All aboard, with the exception of the delirious patient, knew that the plane would sink almost as soon as she touched the water.

Keyser was at his post beside the pilot. The sick boy's father, who was accompanying him to Norfolk, was in the rear cockpit with the other members of the crew. As the plane arrived over Hampton Roads, Keyser and Mainwaring climbed out on the wings between the two Liberty motors with which the plane was powered in order to be ready to help Gavin get the patient out of the forward cockpit. Mendenhall and Mayo slid out on the tail of the plane in the hope that the weight of their bodies might aid to some extent in keeping the craft afloat after she landed by tilting the front of the ship out of the water.

But their efforts were in vain. No sooner had the craft touched the surface of the roadstead, 200 yards from shore, than she sank. Keyser and Mainwaring were pitched forward into the whirling propellers.

"As the craft went under," says a contemporary report of the tragedy, "watchers in the rescue boats saw Gavin toss away his own safety in an attempt to get the litter with Williams clear of the lashings. They saw the waters close over the plane, its propellers still revolving rapidly."

Lieutenant Gwinn, the elder Williams, Mayo and Mendenhall were picked out of the icy waters uninjured; the others were martyrs to the cause of aviation rescue work.

But the ambulance service

Receiving a patient, launching the ambulance, and speeding the patient to the hospital after the airplane flight

went on. The battered F-5L was replaced by a much larger plane, the XPB-2, at that time the largest seaplane in the world. The giant plane, constructed for the air races to Hawaii, was finished too late to participate and was assigned to duty as the ambulance ship.

This, a few months ago, gave way to the present air ambulance, a Loening amphibian, powered with a 525 horsepower Pratt and Whitney "Hornet" engine and especially constructed for the service to which it is assigned. In the fuselage is a roomy space for the accommodation of patient and attendants and the sick man or woman or child is certain of a swift and safe flight to Norfolk whenever the need may arise.

Exterior and interior views of the flying ambulance. This is a Hornet powered Loening amphibian especially built for ambulance service

Pilots skilled in aerial navigation are available night and day to pilot this plane on its errands of mercy. These pilots range in rank from chief aviation pilots, enlisted men, to the commanding officer. One of the recent trips was made with Capt. E. J. King, commanding the station, at the controls. Another recent flight saw Comdr. H. T. Bartlett, executive officer of the station, in command.

Lieut. Comdr. D. H. Vance, medical officer in charge of the naval air station hospital, is always a member of the crew of the flying ambulance. He has made so many trips during the two years he has been stationed at Hampton Roads that in naval circles he is known as "the flying doctor of Cape Hatteras."

"My chief ambition," said Doctor Vance a few days ago, "is to deliver a woman of twins in the air."

"Or triplets," someone ventured.

"Twins will be quite enough," was the doctor's smiling response.

Aviation in Virginia

(*Continued from page* 22)

complete description of these fields, however, was not available at time of this writing. Crewe has an excellent field, lighted for night flying, and which is used as an emergency field on the Richmond-Atlanta air mail line.

A word in praise of the private flying services in Virginia who have carried on despite great handicaps almost since the beginning of aviation, will not be amiss at this time. The apparent ability of these flying pioneers to make the business pay at least a living and some of them to wrench from the game a substantial fortune in a few years, has served to stimulate the rapidly increasing interest in flying in Virginia.

The Reynolds Flying Service at Roanoke, for instance, has at its head a twenty-one-year-old youth, Frank Reynolds, who learned the first elements of the business from the late John Wood. Reynolds, like so many pilots, acquired a Jenny. Later he managed to secure a Waco and finally the Waco agency for his district. He holds a transport license and has never had a serious crack-up although he has operated on one of the most difficult fields to get in and out of in the community.

Although young in years, Reynolds has taught many a good pilot to fly, one of his pupils being a policeman on the Roanoke force. Starting young and without capital he has built a good business and has built it in his own home town. The Charles Flying Service at Richmond already has been mentioned as a leading commercial aviation concern in Virginia. There are numerous others.

The future of aviation in Virginia seems to be assured. The time is not far distant when pilots flying over the Old Dominion will have beneath them a network of highly developed airports, one of which may be reached in emergency from almost any point a few thousand feet in the air.

An important feature which is engaging the interest of the State Chamber of Commerce at present, is that of working out in connection with the increased commercial development of Hampton Roads, the possibility of employing air mail in the handling of documents pertaining to foreign and intercoastal shipments routed through that port. It is believed that great economies may be effected in this way to the benefit of the Virginia ports.

Managing Director Hodges of the State Chamber is sending a series of letters to the various airplane companies calling attention to the favorable location of Virginia for the establishment of an air junction and base to be used in conjunction with the operation of national transoceanic airlines, and to the advantages of the State from a climatic and topographical point of view for the establishment of plants manufacturing aircraft and equipment.

Mechanical Aids *for* Testing Prospective Pilots

By S. R. Winters

WHIRLING like a top, a device invented and patented by Captain W. C. Ocker of the Air Corps of the United States Army simulates a condition of vertigo or dizziness experienced by an aviator subject to fog or blind flying. Combining a revolving chair with instruments and instrument board of an airplane, this new apparatus for testing and training prospective pilots aims to inculcate in our future aviators the necessity for reliance upon instruments for guidance rather than trusting the deluded senses when flying in fog or making blind turns.

A pilot is familiar with the delusion suffered when turning an airplane and upon discontinuing the turn and pursuing a straight course the human senses err in telling that his plane is turning in the opposite direction. A similar hallucination is experienced when turning an airplane and descending at the same time and, upon straightening out and flying level, the pilot has the idea that he is turning in the opposite direction and ascending or descending. The conventional airplane instrument known as the bank-and-turn indicator is designed to dispel this hallucination but when suffering with dizziness incident to blind turns the pilot does not always consult this indicating device —rather trusting his senses, which are then a snare and a delusion.

These physiological and mental reactions common to blind flying, we are told, are not imparted by the so-called Jones-Barney chair for testing aviation students. Therefore, points out Captain Ocker, this new device is intended not only to stimulate the condition of turning an airplane but it aims to teach prospective pilots to have implicit confidence in guiding instruments in blind flying.

"The principle involved," we are told by Captain Ocker, "teaches the pilot that after one or more blind turns, he is suffering from a state of vertigo, which is a reaction experienced by every normal person. The instruments on this whirling chair are to be used to correct this error of our senses, and absolute reliance can be placed in them until such state of vertigo has passed. Also, this will reduce the amount of normal vertigo by about one-half."

This rapidly revolving chair, which purposely produces a state of dizziness, contains the usual components of a chair—back, arm and foot rests. It is mounted on an adjustable ball which may be released or secured in position at the top of the base portion

Above, the whirling chair, and at left, a larger view of the box containing the instruments. Photos by Army Air Corps.

of the apparatus. A hand wheel engaging with a locking mechanism makes it possible to adjust the ball and base portion so as to rotate the chair at the desired angle. A foot lever, pivoted to the base, connects through a rod to a brake, mounted near the ball and adapted to lock the chair when desired. A head rest is provided, adjustable by a rod on the back rest, and one end of this rod is leverage for rotating the chair. As a part of the foot rest, there is a spring-controlled rudder bar. Also, the foot rest contains a vertical pivot post and a platen and to the latter units are secured a sheet of paper and stylus pen for keeping records of the student's manipulation of the rudder bar.

The prospective pilot subjected to this training device has his vision so narrowly circumscribed as to exclude outside objects. This is accomplished by a hood which is adjusted properly to the head and eyes of the test subject. This hood is a box open at one end and is provided with a padded edge to afford a comfortable light seal around the eyes of the pilot-in-the-making. Within this hood—illuminated with a tiny electric light—are the following conventional airplane instruments: bank-and-turn indicator, magnetic compass, and an inclinometer. Air pressure to operate the bank-and-turn indicator is furnished through tubing from a hand pump secured to the whirling chair.

The testing device functions as follows: The pilot being examined seats himself in the chair and

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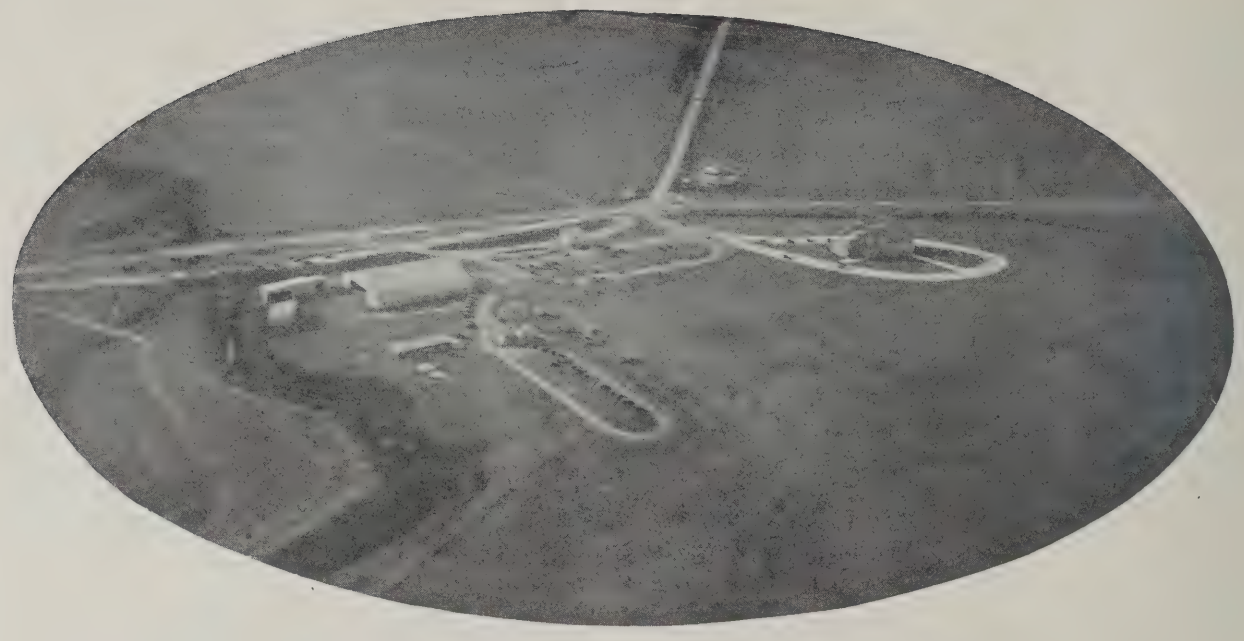


An aerial view of Toney Field taken in the Spring of 1929

The Development *of* Toney Field

Failure of Local Bond Issue Led to Development of Splendid Private Airport at Pine Bluff

WHEN a city suddenly becomes air-minded and decides that it needs an airport, one of the first steps toward getting it is to propose a municipal bond election.

Pine Bluff, Arkansas, is no different from other cities in this respect, save that the failure of a bond election to carry resulted in that city obtaining one of the best airports in the entire country.

The name Toney Field has become synonymous with happy landings, to pilots throughout the nation, and when winging their way through Arkansas they often stop to take advantage of the excellent servicing facilities, and a meal at its commodious club house which has become famous throughout the country for its food and hospitality.

A pilot lands his ship on the 214-acre field which is practically level, with a firm Bermuda grass sod, taxies up to the front door of the $40,000 club house and is accorded all the facilities of a modern hotel. This clubhouse contains a large auditorium with stage, spacious kitchen and dining room, lobby and several small entertainment rooms. On the second floor are nine bedrooms with baths. Every provision is made for the pleasure and recreation of visiting pilots and air tourists.

The surface of the field is a sandy clay, its Bermuda sod making it an ideal landing surface. This is one of the few fields where runways are unnecessary. Although the field is practically level, drainage is excellent, and the field is in good condition throughout the year. Obstructions have been moved from all sides of the field and planes can glide in for a landing from any direction.

A unique feature of the servicing facilities is the $30,000 automatic gasoline service system. Within three minutes after landing a plane can be serviced with gas and oil and ready for the take-off. The new system provides for the servicing of as many as 16 ships at one time.

One of the most powerful night beacons in the South, an 8,000,000 candle power light, is located on top of the operations building in which the executive offices are located. Mounted on tall posts are additional flood lights which will bathe the field in light at any hour of the night.

On top of the operations building is located the weather bureau from which weather charts may be procured at any time on request. This building was built according to government specifications. It is equipped with 18 steel lockers for accommodation of pilots, also safety deposit vault for mail and valuable packages.

A steel and galvanized iron hangar, 105 x 134 feet, is equipped with water, lights and electric power, and heated with natural gas. Provision has been made for two more hangars of the same size.

The builders of Toney Field set out to make it an A-1-A field, and every building and piece of equipment that has been installed has been selected with this idea in mind. When the lighting epuipment is installed it is said that this rating will be made by

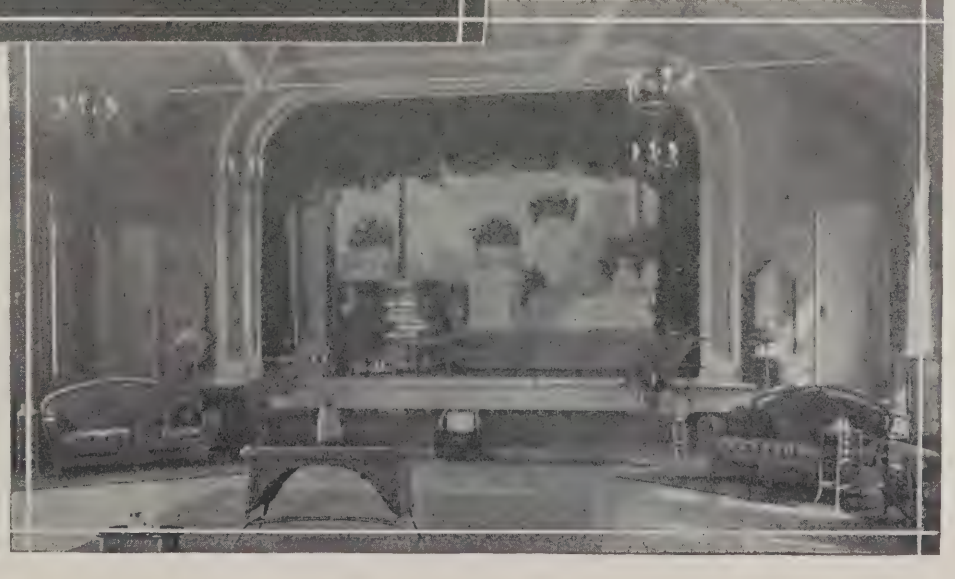
(*Continued on page* 62)

The Club House and Operations Building at Toney Field, Pine Bluff, Ark.

Left: Rear view of the $40,000 club house at Toney Field, Pine Bluff, Arkansas. The building contains an auditorium, dining room, lobby, entertainment rooms and nine bed-rooms.

To the right: A view of the lobby looking from the stage. This is one of the few airports in the South where air travelers may enjoy modern living conveniences without leaving the airport. Personnel of several air tours and cross country flights have stopped here.

Left: Office in the operations building showing air maps and meteorological equipment. This building is equipped with steel lockers and fire proof vault for the convenience of visiting airmen. Beacon, ceiling projector, and floodlights are located on the roof of this building.



Right: A view of the stage from the auditorium. The airport has become a center for social functions in Pine Bluff since its opening in January, 1929. This excellent clubhouse with its modern entertainment facilities has played a big part in making Pine Bluff the most air-minded city in the state.

Development *and* Personnel *of* Miami's Municipal Aviation Board

SOMETIMES an apparently trivial matter will crystallize the indefinite ideas of a group of people and bring about a development that is, in a sense, revolutionary. And it was an affair of but slight importance that brought about the formation of the Municipal Aviation Board of Miami, Florida—a revolutionary act in that it was the first municipal department of its kind in the United States.

Miami has been air-minded, ever since the days of the war when pilots were trained for service right in this city, or on ground that is now a part of the Greater Miami district. This has been due in no small measure to the intelligent cooperation of the city administration and the several live aeronautical associations. There is the Greater Miami Airport Association, a group of business men associated to develop aviation in the Greater Miami area; also the Miami Aero Club, the Miami Glider Club and the Miami Chapter of the National Aeronautic Association.

These, however, were functioning as individual units, and what was so greatly to be desired, the making of Miami the greatest aviation center in the south, could not well be brought about without more concerted effort. And it took such a little thing to bring together all the aviation interests of the community and cause them to work in harmony and without lost effort.

There was no city ordinance to regulate the distance at which an airplane might fly above the city, and as a consequence some pilots seemingly took delight in flying low. The noise of the low-flying motors disturbed guests at the old Royal Palm Hotel and a complaint was made to the city management. As a result of this complaint, the Municipal Aviation Board formed. This Board functions the same as any other in the city management. And Miami was the first city in the country to pass a complete set of aviation ordinances.

Because so many of her best citizens are air-minded, Miami is particularly fortunate in the personnel of the Municipal Aviation Board.

The chairman of this Board is J. E. Yonge, a practicing lawyer. Mr. Yonge served in the army air division, both in America and in France, and is still in the reserve department, attached to the squadron at Maxwell field, Montgomery, Ala. He is also vice-president of the Miami Airport Association.

The second member is B. B. Freeland. Mr. Freeland is owner of the Red Cross Pharmacy, the largest drug store in the city. His aviation training was obtained in the marine corps in France, and he is connected with the marine reserve at Quantico field near Washington.

Wallace B. Culbertson is another active member of the Municipal Aviation Board. Captain Culbertson—he is a pilot for the Pan-American Airways—learned to fly on a Miami field some years ago, and during the World War served as training instructor in the marine corps. In business life Mr. Culbertson is a civil engineer, employed as supervising engineer by the city of Miami.

Another member of this Aviation Board is Hollis Bush, an investment banker of Miami, and one of the city's most enthusiastic aviation fans.

R. V. Waters, the fifth member of this municipal Aviation Board, has for his every-day business the management of properties all over the State. Because of his intense interest in aviation he was elected the first president of the Greater Miami Airport Association.

The active work of the board is carried on under the personal direction of Andrew H. Heermance, Miami's official director of aviation. Mr. Heermance is directly responsible to the city manager and city commission for the conduct of this department The Municipal Aviation Board functions in an advisory capacity on any and every matter pertaining to aviation undertaken by the department.

One of the chief duties of this Aviation Board is to advise with the city government regarding the matter of appropriations necessary to keep the developments in line with the actual demands. Another important work it performs is to investigate and give official sanction to aviation activities of individuals or organizations.

It was through the efforts of the Municipal Aviation Board that the All-American Air Meet is being brought to Miami in January. Due to the work of this same Aviation Board a municipal airport has been provided. In his gift to the city of the tract of land on which the hangar stands, Glenn H. Curtiss, a Miamian whose interest in aviation is known and recognized throughout the country, specified that free use of the field should be given at any and all times to any pilot, and to the military arms of the country.

Another outstanding accomplishment of this Municipal Aviation Board is in connection with the erection of a dirigible hangar for use of the Goodyear Zeppelin Company, Akron, Ohio. In 1917 a hangar was erected by the government at Key West. This has not been used for some time, so the Miami City Commission purchased the hangar and brought it to Miami where it has been erected on a 40-acre tract of land at Opa-Locka.

The building area and a portion of Randolph Field, San Antonio. Photo by U. S. Army Air Service

The World's Largest Airport

By T. D. Higgins

A NEW and impressive landmark in the forward march of southern aviation progress has been firmly established by the war department at Washington in the form of Randolph Field, located 16 miles northeast of San Antonio, where the government plans to house the Air Corps Training Center, an integral part of the United States Army Air Corps that offers military flying training to embryo pilots.

The huge project, which will be the most extensive and largest of all the world's airports when completed, was conceived by the United States Army Air Corps and is being constructed by the United States Army Quartermaster Corps. Conservative estimates place the cost of its actual construction at between $20,000,000 and $30,000,000, but with full equipment in place the sum of $50,000,000 has been mentioned as easily possible to spend.

The Air Corps Training Center, commanded by Brig. Gen. Frank P. Lahm, now has headquarters at Duncan Field in San Antonio. It also embraces Kelly Field and Brooks Field, both at San Antonio, and March Field, at Riverside, Cal. Eight months of primary flying training are given the students at Brooks and March fields. and they are then sent to Kelly Field for four months of advanced training and specialized military flying.

Randolph Field, consisting of 2,000 acres exclusive of sewer tracts, was purchased by citizens of San Antonio and conveyed to the United States for the sum of one dollar. Of the entire tract, 500 acres will comprise the building area and 1,500 acres the landing field.

Capt. A. W. Parker, Quartermaster Corps, on duty at Fort Sam Houston, is the constructing quartermaster in charge of construction work at Randolph Field.

Present plans call for the erection of nearly 600 buildings at the airdrome. Comfort, efficiency and attractiveness are the keynotes of their design and nothing has been left undone to attain that objective. In keeping with the general type of architecture prevailing throughout San Antonio, and which is now being embodied in the building program at Fort Sam Houston, the picturesque Spanish design will be adhered to largely.

The first permanent building at Randolph Field is now under way after approximately a year's preparation on roads, water system and other utilities and in conditioning the airdrome. The initial construction contract of the project, awarded to Murch Brothers Construction Company of St. Louis, calls for erection of six barracks and two warehouses.

The warehouses will be finished by April 1, followed by one barracks building each succeeding 30 days. They will be of reinforced concrete with concrete floors, tile walls and roof and stucco exterior.

Unable to grasp the significance of the size of Randolph Field or to realize just how big an undertaking it is, those in active charge of construction declare they occasionally receive mental jolts.

It will in reality be a little city. The building area is 1,700 by 4,500 feet, practically a mile square, and its population probably will number 5,000 persons.

Over 16 miles of gravel roads, all that the plans call for, have already been constructed over the building area. These will later be permanently surfaced with concrete or asphalt.

Cost of concrete curbing along the roads will amount to about $140,000. There will be 13 miles of

Brigadier-General Frank P. Lahm, commanding the Air Corps Training Center, San Antonio

sewerage system, for which a contract has been let for approximately $50,000. The daily water supply needed at the airdrome has been estimated at 1,750,000 gallons. Ten wells have been sunk, with one half of them producing. Their volume will not be determined until they have been hooked up an tested.

The water distribution system, which does not include wells and storage tank, is finished. Two contracts were awarded, one for $40,000 and the other for $35,000.

Twenty-six of the largest hangars for heavier-than-air craft in the country will line three sides of the building area. If placed in a single line they would reach a distance of three miles. They are of sufficient size to house 240 planes.

Concrete aprons, 150 feet wide, to be placed in front of the hangars, will cover approximately 2,000,000 square feet at an estimated cost of $315,000.

One thousand car loads of cement will be required on the project. With 50 tons to the car, it would represent 25,000 two-ton truck loads.

And at a rough estimate the sand and gravel needed will be six times the amount of cement, or 150,000 truck loads.

In preparing the immense landing field the work involves the planting of probably the largest lawn in the world. A total of 650 of the 1,500 acres is already planted with a strip of Bermuda grass 500 feet wide. This work will be continued in the spring. The planting of five different landing stages has already been completed. The Bermuda grass makes the turf of such quality that it does away with the necessity of runways.

Ninety per cent of the field has been finished as to leveling, and an automobile may travel 35 miles an hour across it without any noticeable jars from the terrain. All brush has been cleared away, but some trees have been left in the building area where they do not interfere.

A railroad spur, one and a half miles long, has been installed. It will be a permanent fixture. Nearly 300 men are now employed at the site, but when the construction work swings into full operation it is estimated that 10,000 men will be employed at one time.

It is hoped to complete the building program in three years.

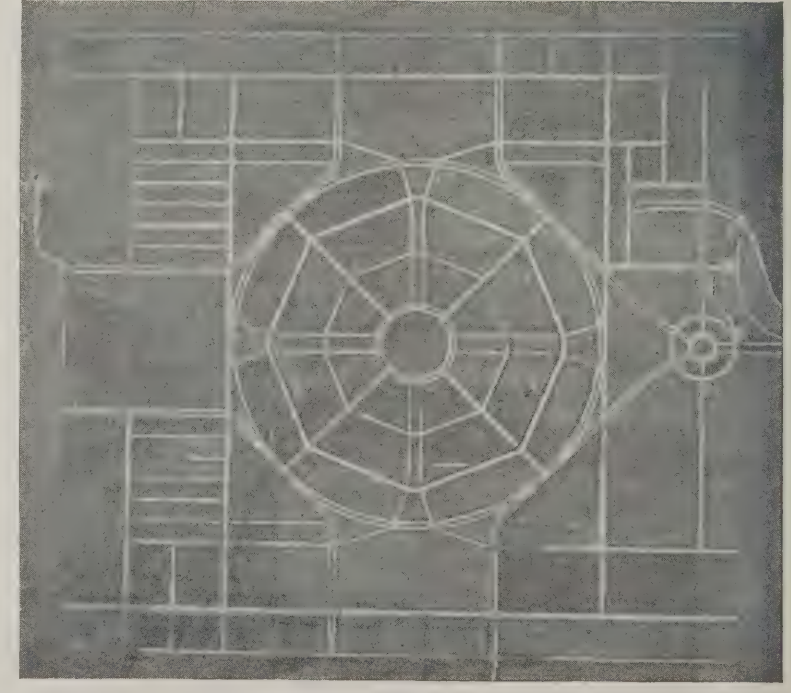
While the landing field extends from all four sides of the building area, the section through which the entrance to the airdrome has been constructed probably will not ordinarily be used, it was stated, although it is available and the railroad spur and roads have been so arranged as not to form a hazard to landing.

Forming the keynote of the entire layout at the field will be the huge administration building, standing at the entrance of the building area. The building, 300 by 130 feet, will cost about $200,000. One of its unique features will be the camouflaging of the water tower, always an eyesore, by covering it with an attractive tower rising 175 feet above the center of the building. An observation room and meteorological station will be located above the tank and reached by an elevator from the ground floor. One of the most powerful revolving beacons in the country is to be mounted on the dome.

The administration offices of the commanding general and his staff will be housed on the second floor. The ground floor has been given over to the signal office, meteorological office, telephone exchange, radio receiving station, telegraph office, post office, printing plant, quartermaster administration offices, photographic laboratory, court room, judge advocate's office and the post theatre and auditorium. A stage, 28 by 40 feet, will be in the theatre. The auditorium will seat 900 on the main floor and 250 in the balcony.

In laying out the officers' and non-commissioned officers' quarters, plans have been made so that these structures will take advantage of the prevailing winds.

(*Continued on page* 62)



Air Corps photograph taken in November showing progress of development of building area at Randolph Field. Included in this area is 18 miles of gravel road, later to be surfaced

Putting Over a Three-Quarter Million Airport Bond Issue in Tampa

By Bill Abbott

TAMPA, southern port of entry for the big New York, Rio and Buenos Aires line to South America and the gateway to the rapidly developing air commerce of Latin America, soon will spend $750,000 on one of the best combined land and sea plane bases in the country.

Bonds for the project were voted by Tampa taxpayers in November and actual construction is to be started this winter to have the modern base in operation for fliers by mid-summer. The site will be chosen on the best advice obtainable in the field of aviation. It will have an A-1-A rating from the beginning.

A committee in charge of the site selection, already functioning, is composed of two prominent Tampans, a city planning expert and representatives of the Department of Commerce, the army and navy. A committee of Tampans has been named by Mayor D. B. McKay to supervise the expenditures of the bond proceeds and the award of contracts.

Tampa took its biggest step forward in its aviation progress in the voting of the bonds which were carried by a two-to-one majority after an intensive campaign of air-minded boosters.

THE recent voting of a $750,000 airport bond issue assures airport facilities which will make Tampa one of the nation's great aviation centers. How the campaign for the bond issue was waged to a successful conclusion despite much dissension over the proposed airport sites makes an interesting story and one which should be of value to those interested in airport development in other cities.

The election result is regarded in Tampa as having made the city probably the most important center in the South in the nation's air expansion toward Latin America. With its strategic location on an air line between New York and Havana, the modern plane base is expected to draw steadily increasing traffic.

The airport with provisions for future enlargement puts Tampa into the front rank of southern air-minded communities only after the city floundered for a time in inadequate facilities and some opposition to moving forward in aviation. Its experience in putting over the bond issue may be of value to other cities, sprouting aviation wings in the future.

Toward the end of last summer $750,000 for aviation appeared to be an exorbitant price for a few planes overhead. At that time little did the city realize the tremendous opportunity in its grasp that might have been lost irretrievably in the election.

Before last spring Tampa took aviation as something to watch for the thrill of seeing men risk their lives. It had turned out by the thousands, two years before, for the opening of Drew field, the municipal airport, but then curiosity was the impelling motive. It wagged along with the municipal field, lined with stumps, still craning its neck at planes in the air but with no enthusiasm that touched its pocket book.

Then last spring Charles A. McKeand, secretary of the chamber of commerce, and George M. Osborn, wartime aviation executive and builder of a number of army fields, saw a vision. Osborn, tendered the chairmanship of the chamber's aviation committee composed of prominent business men, agreed to take it on one condition—that Tampa be made air-minded.

He and McKeand with a prophetic instinct knew what was happening. They knew air liners soon would be going southward in scheduled service with passengers and express, cutting the time of ships by weeks and penetrating rich virgin trade territory. They knew Tampa was the logical point of entry to the United States for this commerce, that Tampa would have rivals and would be compelled to be on the alert to get it.

At that time McKeand said: "The biggest thing that I can comprehend is right now within Tampa's grasp, and there is an excellent chance of Tampa losing it. When I think of its possibilities, I can't sleep."

He was told by the chamber to go out and get the best man available in the country to develop the city's aviation facilities and industry. He went north, conferred with government officials in Washington, and with aviation leaders in New York, Chicago, Detroit and elsewhere.

He returned to Tampa with Charles T. Blackburn, former naval commander and aviation advisor, who put into operation the New York-Chicago air mail line for National Air Transport.

Blackburn got busy and in less than a month announced that the New York, Rio and Buenos Aires line had selected Tampa for its port of entry into the United States from the south and would establish its southern terminus in this country there.

That put aviation in a business light. Business men were interested. They contributed $10,000 toward a good-will flight of the Nyrba plane, Southern

Star, that soared from Tampa one starry night last June with a box of choice Tampa cigars for the president of Chile and neighborly greetings to all the countries along the route.

The summer wore along and interest lagged again. The summer rains came. They did more than any other one thing ultimately to make Tampa air-minded and dig deep to prepare for its future in aviation. The rains made a bog of the municipal field. Mail planes had difficulty in landing. Officials of the Pitcairn line, holding the mail contract, complained. Nothing could be done on short notice.

They took their planes and went to a nearby city. They couldn't land in the mud. An amphibian of the New York, Rio and Buenos Aires line tried to land, hit a stump on the muddy field, tore a hole in its hull and was sent back to the factory for repairs.

Mayor McKay and city officials, realizing the opportune time had come, began talking bonds and an airport that would meet the city's future needs. They called an election.

A committee of 100 young business men, organized to promote the civic welfare of Tampa, stepped into the drive. The Chamber of Commerce, of course, and other civic organizations joined.

Difficulties in Choosing a Site

There was the matter of a site. Seven available tracts with water frontage were suggested. The dredging of an island from the bottom of a shallow bay was proposed and recommended by the United States Department of Commerce after a survey.

The site question started trouble. Among the voters each of them had opposition. Vigorous objections arose to the island project which had been approved by aviation experts. Individual sites were favored by individual groups. The hopeless split on the sites threatened to wreck any bond issue proposal put before the voters.

City officials used diplomacy. With the boosters for aviation they persuaded Tampa that it needed an adequate airport and needed it immediately or be definitely out of the running with other forward looking municipalities. The newspapers laid down a barrage of reasons for better plane facilities. They told how other cities had attracted aviation industries with airports, how aviation was growing in the South by leaps and bounds daily.

The site was forgotten. Mayor McKay and his city board of representatives agreed to leave the site to a disinterested committee, including both prominent local men and government advisors. The proposition was acceptable.

The women of the city, apprehensive of industries and commercialism that might mar the beauty of their home surroundings, suggested that a city planning expert be named on the committee so there could be no possible mistake. This was done. The mayor was given authority to appoint an outstanding city planner to confer with on the site selection.

Tampa voted for an airport because it needed it. The site will come next, but aviation may be assured it will be the best one possible and one that will serve their every interest, even though at one time it threatened to defeat its own ends.

And Tampa would like to tell the aviation world that its new airport will be high and dry and that no planes will be mired there during the summer rains.

Charting the Airways

(*Continued from page* 23)

country has already reached the staggering total of 30,000 miles. Other than representing so much longitude and latitude or area in miles, the "U. S. Airway Charts" will define ground elevations—in steps from sea level to 1,000 feet, 1,000 to 2,000 feet, 2,000 to 3,000 feet, and then in multiples of two up to 9,000 feet—and from 9,000 feet to the maximum, which is represented by Mount Whitney. The scale of the map in area is 1 inch on paper to represent 500,000 inches on the ground.

While the charting of more than 10,000 miles of airways is primarily an undertaking in compilation, the great number of sources from which it is necessary to seek information contributes to the difficulty of the job. This is a task assigned Raymond L. Ross, Chief, and J. R. Fitzgerald, Assistant, and a crew of map-makers in the Coast and Geodetic Survey. Among the sources from which data are assembled are: the Geological Survey, Bureau of Public Roads, Forest Service, Land Office, Reclamation Service, state highway commissions, railroads, hydro-electric power development interests, and owners of power transmission lines. For example, no government agency has assembled information on the locations of power transmission lines and it was necessary for the Coast and Geodetic Survey to obtain these data direct from the power companies.

With the completion of a sectional "U. S. Airway Chart," an engineer of the Coast and Geodetic Survey will be assigned, with a pilot, on an airplane surveying trip for checking the accuracy of the map.

Servicing Airplane Motors

(*Continued from page* 15)

One of the facilities at New Orleans and Dallas, believed to be unique in the country, is the turntable for swinging compasses.

Without such turntables, compensating compasses used to be a four or five hour job, in which the whole ship had to be turned and sighted in on some distant object. With everything calibrated on the turntable, the job is now done in 20 minutes.

The turntable is typical of the entire S. A. S. layout—designed to save time and do the job better. Organized primarily to care for the ships of its parent company, S. A. S. has given the benefit of its equipment, teamwork and distinctive methods to southern aviation generally.

It has this slogan: "When you're in trouble send an S. O. S. to S. A. S."

News of the Southern AIRPORTS AND AIRWAYS

Great Southern Airways Starts Operations

THE Great Southern Airways, Inc., a New Jersey corporation headed by Charles M. Hatch, as president, and J. Borden Miller, vice president and general manager, was scheduled on January 1 to open the first leg of what eventually will be a 25-hour New York to Los Angeles air service. The initial link will be between Dallas and Los Angeles, via El Paso, Texas. Four 8-passenger Flamingo All-Metal passenger jobs, with rated speed of 135 miles an hour, powered with Hornet motors and fully equipped for safety and convenience, were to be placed on this run, it was announced.

Soon after the opening of the line it is proposed to open the eastward leg of the route, from Dallas to Atlanta, via Birmingham and Shreveport. Concurrently, it is understood that the line either will be extended to New York or arrangements made with one of the present lines for connections at Atlanta. With the completion of this hook-up, a 25-hour service from coast to coast is expected to be attained.

Messrs. Hatch and Miller, traveling in the first of their Flamingo All-Metal planes, visited Fort Worth and Dallas during the latter part of November and early December, being flown there by C. Young, chief test pilot for the All Metal Aircraft Corporation of Cincinnati.

Arrangements were made at that time for W. A. Gibson, southwestern representative of Metal Aircraft Corporation, to take charge temporarily of arrangements for the new line, at Dallas. Preparations for basing the four planes that will operate the western leg of the route at Love Field, Dallas, were set under way.

Mr. Hatch then departed for Cincinnati where he was to expedite delivery of the remaining three ships and arrange for the rest of those needed, while Mr. Miller left for Los Angeles to complete arrangements for the West Coast terminal. Great Southern Airways was incorporated in Delaware recently with capitalization of $1,500,000, it is stated.

The concern's initial ship, a classy white job with a striking insignia showing a plane set upon a golden ball and lettered, "Great Southern Airways. In the path of the sun. Los Angeles - Atlanta," attracted marked attention in the Texas cities where it was shown.

Installation of a new lighting system at Menefee Airport, New Orleans home of Southern Air Transport, Inc., will be completed before the end of January, representatives of S. A. T. announce. The new system is to cost approximately $15,000.

Great Southern Airlines officials. Left to right: J. Borden Miller, vice-president, Chas. M. Hatch, president, and C. Young, chief test pilot

Baltimore Airways Will Extend Lines South

EDWARD HANDLER, of Baltimore, Md., president of the Baltimore Airways, Inc., has announced that the service of the concern, which was inaugurated on October 27, between Baltimore and New York, would be extended to the South immediately. As the first step in that direction, Mr. Handler left Baltimore for the purpose of negotiating for landing stops, in the proposed Baltimore-to-Miami air service.

The decision to extend the service of Baltimore Airways, Inc., farther south than Baltimore resulted from the success the concern has experienced with its recently inaugurated Baltimore to New York air service. Both passengers and freight will be carried on the Baltimore to Miami or New York to Miami trip.

Plans for the New York-Miami service call for a weekly schedule of three flights each way. Planes would leave New York at 6 A. M., arriving in Baltimore about 7:25 A. M. and taking off for Miami a few minutes later. In addition to the stop at Baltimore the planes would land at Richmond, Va., Raleigh, N. C., Camden, S. C., Savannah, Ga., Jacksonville and Miami, Fla. Monoplanes will be used on the Miami route, similar to those now used on the New York service. They have glass-inclosed cabins and carry five passengers and the pilot.

Owing to the increased business the concern has experienced on its New York to Baltimore service since its inauguration, Mr. Handler said the airways company is planning to place additional planes in service on this route.

In addition to the Miami-New York route, Mr. Handler said the company is contemplating the establishment of a passenger and package carrying service from New York to Chicago, with stops at Pittsburgh and Cleveland.

The Baltimore Airways, Inc., operate the airport on Park Heights Avenue, Baltimore, known as Handler Field, and conduct a daily passenger service between Baltimore and New York, inaugurated in October.

Increase *in* Flying Activities *in* Charleston, S. C.

By M. Bishop Alexander

ONE of the most conservative cities of the "Old South," Charleston, has become "air minded." Last August ten thousand citizens participated in the formal opening of the new Charleston Airport, a level well-turfed and drained tract of nearly a thousand acres not far outside the city limits. The opening ceremonies were featured by an air meet in which twenty planes took part.

As the months have passed the interest of Charleston in aviation has increased. Charleston now is working out plans for a combination land and water airport to meet the demands of the fast-growing number of planes of aerial lines and individuals who have chosen the coastal route of air travel or who operate in the South.

Charleston is known as "America's Most Historic City" and for years, during the forward strides and early development of airplanes, showed little interest in aviation. The few planes which visited the seaport city were taken more or less as a matter of course. They were things apart from Charleston, very different from the cobblestones and great old buildings wherein so much history was made.

Of recent months Charleston has seen scores of commercial planes visit the city and hundreds of navy, army and marine corps planes have made Charleston a stop-over point, using the small navy yard field and the also inadequate and now abandoned Riverland Terrace Field which the Charleston Chamber of Commerce managed to secure and condition in 1928 despite lack of enthusiasm of the citizens.

In the winter of 1928 and the spring of 1929, Charleston was visited a number of times by air tourists. A party from Detroit flew down over the week-end for the express purpose of seeing the Magnolia Gardens and Middleton Place Gardens in full bloom. William S. Brock, of the noted Brock-Schlee team, was the pilot. The following week there came an aerial party from New York and another from Washington and Norfolk.

Then in the late spring a number of the millionaire plantation owners and members of the exclusive Yeaman's Hall Club near Charleston began using their own planes and in some cases building their own landing fields. Developments in aviation were forcing themselves on Charleston and the staid old city began to sit up and take notice. Interest in aviation increased rapidly.

In the early summer there came to Charleston a steady stream of commercial planes, tri-motor twelve-passenger jobs, amphibians, flying boats, and in fact every type of aircraft. Inquiries as to the purpose of the trips revealed that they were "scouting around" and were "mapping direct north-south air lines" or "picking out cities with the best facilities and locations for stops on New North-South American Air Lines." It was pointed out again and again that Charleston was on the logical direct coastal air route and that the immediate future held wide recognition for Charleston in aviation circles.

The two little air fields at Charleston began to draw crowds daily and the local pilots soon were working overtime accommodating those daring "a ride" and giving instructions to the many applicants who wanted to "learn to fly."

And so, Charleston became air-minded.

The Chamber of Commerce and the city and county administrations joined heads and hands and there resulted an announcement that a site a little less than ten miles from the heart of the city, adjacent to a paved highway and a railroad station, a tract of nearly a thousand acres had been secured and would be conditioned at once for use as the official Charleston Airport. Trees were cut down, drainage installed, grading and rolling completed, grass planted, and runways developed. On August 10 the Charleston Airport was dedicated.

The improved surface of the new Charleston Airport is approximately 3,000 by 3,500 feet. The east and west runway is approximately 600 feet. The prevailing wind is southwest to north. The field is 1,400 feet west of the Ten Mile Station on the Southern Railway trackage running from Columbia to Charleston.

A Department of Commerce Airways Bulletin giving descriptions on the Charleston Airport is in the process of preparation and will be distributed shortly. The direction and distance of the airport from Charleston is approximately ten miles north, 53 degrees west. Several roof signs and airport directional markers are easily discernible in the city and on the outskirts. The most prominent markers are chrome yellow on black, white on black and black on aluminum. They give in most cases distance and direction by the use of a large arrow.

The field is of grass surface and contains no obstructions. There is no gradient, nor soft spot. It is marked with a hundred foot white circle and a wind cone. There are no buildings other than a group of small booths for fuel and refreshments.

Nationally known aviators who flew to Charleston in 1929 include Colonel Charles Lindbergh, Clarence Chamberlin, Wilmer Stultz, C. B. D. Collyer, Wm. S. Brock, Edward Schlee, Charles Levine, Linton Wells, W. C. Brooks, Robb Oertel, Lieut. J. H. Doolittle, Lieut. W. D. Davis and Lieut. C. C. Champion.

Ted Lewis Heads Braniff Division of Universal

John D. (Ted) Lewis has been appointed general manager of the Braniff Division of the Universal Aviation Corporation.

Mr. Lewis is a veteran of the World War, having enlisted with the Canadian Royal Flying Corps in 1916. He saw active service in France.

At the close of the war he entered commercial aviation in New York, joining the Interallied Aircraft Corporation. He has been actively engaged in aviation since, having accumulated over 3,000 hours in the air. He is a graduate of the University of Manitoba.

His headquarters will be at Tulsa, where Universal has recently opened one of the most modern hangars in the country.

Standard Airlines terminal depot at El Paso, Texas

Standard Airlines Celebrate Second Anniversary

By **Fred L. Hattoom**

AFTER two years of operating a modern air transport passenger and express service through the Southwest, Standard Airlines, Inc., commemorated its second anniversary November 28, with over 661,000 miles of successful transportation accomplished.

On November 28, 1927 the Standard Airlines introduced the first passenger and express airline service in the Southwest, with Los Angeles and Tucson, Arizona, as its terminals — the line extending through Phoenix, Arizona, as an intermediate stop. This was one of the first strictly passenger lines in the country, as most of the scheduled airlines in the United States at that time were operating on an air-mail contract and carried passengers only when space permitted.

With no mail contract or the prestige such service gives to passenger carrying, the Standard started operation on a tri-weekly schedule in an effort to feasibly offer a strictly passenger airline service. In as much as this was the first airline to traverse this section, an extensive program for the creating of air-mindedness confronted the operators of this line.

However, with the full support of the press, Chambers of Commerce, and various civic organizations, air transportation soon became an important mode of travel through this territory.

Public support over this line was so great during the first six months as to warrant a substantial reduction in the passenger fares between Los Angeles, Phoenix, and Tucson, and traffic continued to increase until expansion became inevitable. Over 171,000 miles were flown over this route when fifteen months later, on February 4, 1929, negotiations were completed between the Standard Airlines and the Texas and Pacific railway whereby a joint operation of these two transportation companies gave the United States its first transcontinental air-mail service.

Simultaneously on that date the Standard Airlines extended its service to El Paso, Texas, with Douglas, Ariz., as an intermediate stop, and increased its schedule to a daily service each way. At El Paso, which became the new eastern terminal, connections between the air and rail companies were made.

Faster and larger Fokker Airliners were put into service making it possible to cover the 800 miles between Los Angeles and El Paso in exactly eight hours, including all intermediate stops.

America's first transcontinental air-mail service was readily accepted by the traveling public as not only a great time saving medium but an advancement in transportation through the South, long needed.

Six months later, on August 4 of last year, expansion again became necessary and the Standard Airlines replaced its entire flying equipment with a fleet of 14-passenger Super F-10 tri-motor Fokker Airliners. These planes, which are today the ultimate in air transport planes, are equipped with the latest device for the convenience of passengers and, developing a total of 1275 H. P., are capable of a speed in excess of 150 miles per hour.

Not only was the Standard Airlines system improved with the addition of these large planes but the entire transcontinental system was improved through arrangements completed with the Southwest Air Fast Express and the New York Central whereby the joint efforts of all three companies would greatly improve the entire cross country route and reduce the traveling time between the Pacific and Atlantic Coast.

Only two months later, on Oc-

One of Standard Airlines' Fokker passenger planes ready to take off from the El Paso terminal

tober 6, a new airline terminal and depot was dedicated by the Standard Airlines at El Paso. This field is considered one of the finest flying fields and airline terminals in Western Texas.

Through a recent coalition with the Corporation Aeronautic Transportes, Standard Airlines, Inc., now offers its passengers at El Paso direct connections to Mexico City via Chihuahua, Jimenez, Torreon, and Zacatecas. This connection offers the traveler a service between Los Angeles and Mexico City 22 hours faster than any existing form of air or rail transportation between these two points.

A still different connection at El Paso offers the traveler the facilities of the Mid Continent Air Express to Chicago via Denver and Kansas City.

Algiers, Louisiana, to Have Naval Air Station

Construction of a navel air station in Algiers, less than fifteen minutes' ride by automobile from the center of New Orleans' business district, will be started within a very short time, Ernest Lee Jahncke, assistant secretary of the navy, announced recently.

According to Secretary Jahncke's announcement, adequate provisions will be made for land and sea planes; and arrangements will be made to accommodate naval aircraft carriers at wharves adjoining the new air station.

The Algiers unit, it has been explained, will be operated in conjunction with the naval air station at Pensacola, where shallow waters prevent visits to the station grounds by seagoing aircraft carriers.

East Coast Airways Is Organized

A passenger and freight airplane service between Baltimore, Md., and the southern states, and also along the Eastern seaboard, is proposed by the recently incorporated East Coast Airways. The concern plans to establish its permanent Baltimore terminus on the municipal airport at Dundalk, just outside of Baltimore, when that airport is finished, according to James J. O'Meara, vice-president of the East Coast Airways. Mr. O'Meara said it was proposed to operate fourteen planes in the passenger services between Baltimore and the southern states and along the Eastern seaboard. He said the company, in addition to its passenger and freight service, is expected to take the local agency for an Italian land and sea plane. A. W. Gieske, Jr., is president of the East Coast Airways, Inc.

The El Paso terminal of the Standard Airlines. This is considered one of the finest fields and terminals in West Texas

Until the municipal airport of Baltimore is ready, six acres of land, near the Hanover street bridge, south of Broening Park, will be rented from the city of Baltimore at a nominal sum and used temporarily as a depot for the amphibian plane service. The lease is to limit the company's occupancy of the Hanover Street site to the period up to the completion of the Municipal flying field. Temporary hangars and other structures will be erected at the temporary site.

The East Coast Airways is also maturing plans for a school for teaching aeronautic mechanics and flying, according to Mr. O'Meara.

New Curtiss Airport at Baltimore

THE Curtiss-Wright Airports Corporation will erect at Green Spring and Smith Avenues, Baltimore, Md., one of the largest and most modern airdromes in the country. The concern has a 261-acre tract of land for it, and work of converting it into a modern airport was started recently. The project will require five years for completion. However, a sufficient amount of the airport will be developed by next spring so that it will be in operation. Two hangars are nearing completion and work on several other buildings is ready to start. They will be ready by April.

The goal of the work of the Curtiss-Wright Airports Corporation in this city at the end of the five-year period is six ultra-modern airplane hangars, a large terminal building where lounging quarters, smoking rooms, radios, ballroom, library and waiting rooms for the passengers and accommodations for the pilots will be housed; a student headquarters building, repair shop, headquarters for a students' flying club, a recreation house for the students, picnic grounds, parking space for 2,000 automobiles, motor test house, three garages, one public garage, one for patrons at the airport and one for the airport personnel and four runways of approximately 3,000 feet.

In the terminal building, passengers and patrons of the aerial taxi and sight-seeing services, and possibly airplanes, will be afforded the same conveniences, if not more, than they find in the average railroad passenger terminal. It is also planned to have hotel facilities in the terminal building, so that passengers arriving at the field late at night and scheduled to take-off early the next morning may stay at the airport overnight. The pilots will also have quarters in the terminal building, where they may rest between shifts. Tennis courts and other recreation facilities will be a feature on the recreation field. An interesting feature will be the 20-acre, heavily-wooded picnic ground, the 2,000 automobile parking space and the public garage.

Unlike other airplane hangars on airports, the hangars at the local Curtiss-Wright Airports Corporation airport will be of steel and re-inforced concrete and will be of architectural beauty. They will be 123 feet wide, 137 feet long, 35 feet high, and fireproof.

When completed this airport will mark a real advancement in Baltimore aviation development. It will undoubtedly be the largest airport in Baltimore for some time to come and will take its rank among the largest airports in the country.

Birmingham Plans Million Dollar Airport

THE city of Birmingham is planning to spend $1,000,000 for a municipal airport. Funds for the project will be raised through a bond issue, to be voted on in Birmingham Feb. 15, according to City Commission President Jimmie Jones.

Condemnation proceedings on a 300-acre site only five miles from the Birmingham post office have been filed in probate court by the city, with action expected to be completed by the end of January.

The site, northeast of the city, was selected from forty possible tracts by an airport committee appointed by the city and composed of Maj. Sumter Smith, commander of the One-Hundred-Sixth Observation Squadron, assistant city attorney J. H. Willis and city engineer John Hawkins.

A Department of Commerce expert went over six of the possible sites and without knowledge of the committee's selection, picked the one the committee had decided upon as offering the greatest potentialities.

The site, which will be developed for an A-1-A rating, was selected with a view toward freedom from smoke and fog that frequently make flying conditions around Birmingham bad. It is entirely level, free of surrounding obstructions and well drained, although it will be necessary to reroute a small creek and do some grading.

Birmingham delegates to the Washington air mail conference promised, with the permission of Commission President Jones, that Birmingham is to build an airport "as good as any in the country" and asked that the city's present lack of a municipal airport not influence the post-office department in routing the southern transcontinental air mail line.

Each civic club in Birmingham has appointed an aviation committee to work on the bond election, which has been editorially endorsed by The Birmingham News and Age-Herald. The Birmingham chapter of the N. A. A. also plans special work in publicity and campaigning to insure passage of the issue.

Commercial flying has been barred from Roberts Field, owned by the Alabama National Guard, with the exception of the scheduled cross-country lines, and there is little Birmingham can do in aviation development until the municipal airport is developed.

As soon as the issue is passed, work on the field will be started and it is hoped that the airport will be available for flying by the first of August, 1930.

Goodyear Blimp Reaches New Home in Miami

The first official Miami flight of the Goodyear blimp, Defender, was made the morning after its arrival in Miami, Saturday, December 7. Those included in the flight which lasted for two hours and one half were: Welton A. Snow, Miami's air minded city manager; Sara Wheeler, mayor of Opa Locka; Ben Robinson, staff writer for the Miami Herald, M. Warren, staff writer and C. Ebbets, photographer for the Miami Daily News, and Harold M. Farkas, United Press correspondent and aviation publicity manager of the city of Miami.

In the afternoon the blimp floated over the new Madison Square Garden arena in Miami while Mrs. Welton A. Snow, wife of the city manager, dropped a football tied to a parachute to start the Florida-Oregon game. Saturday evening the Defender made its first night trip, carrying other officials of the city.

St. Petersburg, Florida, has been designated a daily stop on the New York-Miami air mail route. Northbound planes will leave St. Petersburg at one p. m. and southbound planes will arrive at one-fifteen p. m. This service became effective December 14, through an order issued by Second Assistant Postmaster General, W. Irving Glover. A celebration was held in St. Petersburg when service was inaugurated.

Above: The Goodyear blimp, Defender, preparing to discharge a cargo of passengers near Miami. Below: The New Goodyear hangar at Miami

More Improvements at Menefee Field

LATEST developments in a program to improve Menefee Field at New Orleans, La., and to establish there the finest overhaul depot in that section of the country, include the clearing of land around the field, making additions to personnel and perfecting the mechanical facilities.

The present improvement program at the airport is being made by the Southern Air Transport division of the Aviation Corporation, and follows closely upon an extensve project just completed which included the construction of an administration building, shop and hangar, extension of runways and a difficult drainage system.

Opening of the shop in the new building followed the installation of the finest aeromotive repair equipment available and the addition of an extensive aircraft repair service to the motor overhaul department already there, according to H. B. Taylor, general manager of the Southern Aeromotive Service, Inc., Southern Air Transport subsidiary. Improvements to perfect the shop are now under way.

Heaters for the doping room are being installed to provide even temperature and moisture content of the air. Heating will be done indirectly by using heated air, accepted as the best method of maintaining proper temperature in airplane overhaul shops.

An instrument repair service, similar to that offered at factories, is to be installed. To that end, Fred Stewart, expert pilot and mechanic who has been in charge of instrument repair at the main shops in Fort Worth, has been sent to New Orleans to head the department. He will also serve as airplane inspector for the New Orleans division of the Southern Air Transport.

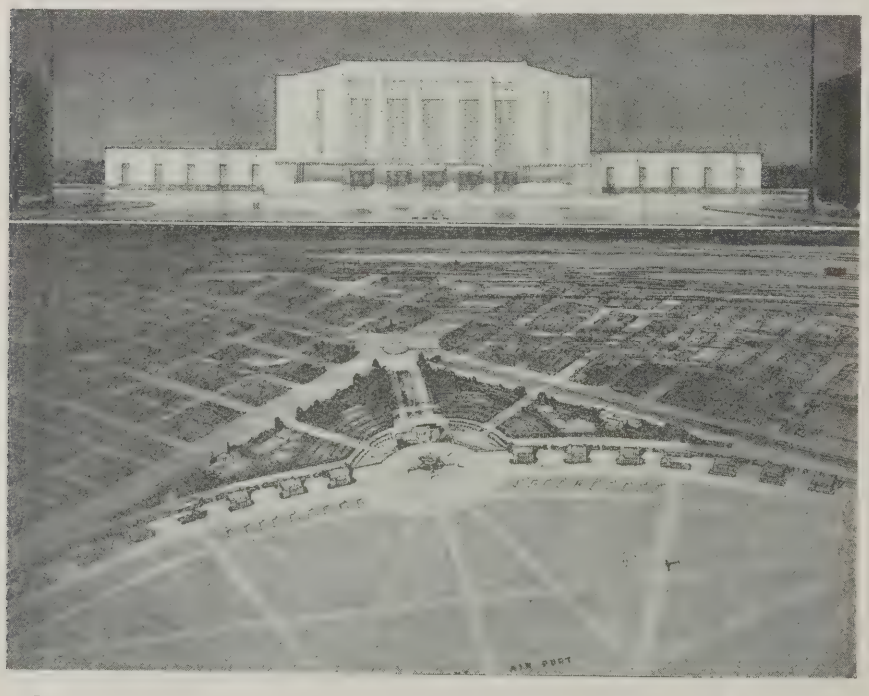
Other additions to the personnel are H. L. Stamets, welder of long experience, and Jack Barron, wing builder.

Lights Installed at Jasper Airport

The beacon light at the landing field at Jasper, Tenn., is now in operation and boundry lights are being installed. They will be turned on at an early date.

The beacon light is erected on a point west of the field about 800 feet high and makes an ideal place for signaling aviators, according to employes of the United States Department of Commerce. In making its revolutions the beacon lights parts of three states; Tennessee, Alabama and Georgia.

The emergency field consists of 53 acres of level land and is said to compare favorably with the best between Miami and Chicago. There are no obstructions of any kind to hinder taking off or landing, making it an ideal natural field.



Prize winning design in the Lehigh Airports competition. Submitted by A. C. Zimmerman and W. H. Harrison, of Los Angeles

Lehigh Airport Contest Awards Announced

FIRST prize in the Lehigh Airports Competition, first national contest for designs of modern airports, was awarded to A. C. Zimmerman and William H. Harrison, associated architects of Los Angeles.

The first prize design was chosen from a total of 257 designs submitted by contestants from all sections of the country. The Los Angeles architects were awarded $5,000 of the slightly more than $10,000 prize money offered by the Lehigh Portland Cement Company, sponsors of the contest.

Second prize of $2,500 was won by C. Gifford Rich of Chicago. Third prize of $1,000 went to Odd Nansen, of East Orange, N. J., and Latham C. Squire, of New York City, who prepared their designs jointly. Fourth prize of $500 was won by Will Rice Amon, of New York.

In the first prize design of Harrison and Zimmerman the approach plaza is developed as a dignified park and is provided with huge parking spaces for automobiles, arranged in a great semi-circle along the passenger terminal. This building has a waiting room very similar to that of a railroad station with ticket and information booths, baggage rooms, a large restaurant and lunch counter, news-stands and similar facilities.

The passengers go down separate ramps to an underground passage leading to a star-shaped structure at the edge of the flying field, where telescopic steel tunnels may be extended out on short tracks to reach the doors of arriving or departing planes. The purpose of this arrangement is to keep the passengers protected from the weather at all times, and also to keep them away from revolving propellers on the plane and to absolutely control their access to the flying field itself.

The hangars, service shops, fire station and other field facilities are grouped along the semi-circular edge of the field. The triangular parking area on either side of the approach plaza is developed for the benefit of visitors, patrons and the neighboring community, with a small hotel, playground, swimming pool, stores, shops and room for such other features as many subsequently prove desirable. Care has been taken to make the entire port attractive from the air as well as from the ground.

Mexico Ranks Third in Commercial Airways

Mexico's active air transportation services cover a total of 10,951 kilometers, it is revealed by figures announced by the department of aviation of the Ministry of Communications and Public Works. This places the Republic third among the nations of the world in point of the extent of its commercial airways, the announcement remarks. The following are the Mexican air lines now in active operation:

Mexico City to Brownsville, Texas, with a branch line from Tampico to Tejeria, state of Vera Cruz; City of Vera Cruz to Merida, Yucatan; Matamoros to Mazatlan; Tejeria to Tapachula; Mexico City to Zaragoza, Lower California; Mexico City to Suchiate, with a branch service between Tonala and Tapachula; Mexico City to Ciudad Jaurez, with a spur line connecting Chihuahua City and Nogales, Sonora; City of San Luis Potosi to Torreon and San Luis Potosi City to Guadelajara, state of Jalisco.

Western Air Express Tries Lower Rates

Western Air Express has announced an experimental cut in passenger rates on its Los Angeles to San Francisco and Los Angeles to Kansas City routes.

The fare from San Francisco to Los Angeles has been reduced from $33 to $21.50, which is said to be below the rail rate when all incidentals are figured in. The company plans to give the same service as before the rate cut, which included transportation to and from the business districts and meals en route.

The fare from Los Angeles to Kansas City has been cut from $175 to $140.

These rate cuts are purely experimental according to the company. They became effective December 15 and will be in effect until Jan. 15.

THE first shipment of air mail from Uruguay to the United States arrived in Miami December 9 over the Pan-American Airways. The shipment consisted of sixty-nine pounds, eleven ounces of mail from Montevideo for distribution throughout the United States. Air mail from South American countries now reaches the United States in one-half the length of time required by steamer.

Southwest Air Express Reduces Rates

Fares on the Southwest Air Fast Express lines between St. Louis and points in the Southwest have been reduced to approximate those in effect by the railroads. In some instances the prices were cut below those offered by rail. The cut was from 10 cents to approximately 5 cents per mile, effective January 1.

Erle Halliburton, president of the lines, said the cut was made as an experiment to determine whether the tardiness on the part of the public to take up air travel was on account of prohibitive prices or air fear.

From St. Louis to Tulsa, where the rail-Pullman fare is $20.54, the new air fare will be $19; to Oklahoma City the fare will be $24.50, whereas the rail-Pullman fare is $25.23; to Fort Worth, rail-Pullman fare is $32.72, and the air fare is $35; and to Dallas rail-Pullman is $32.28 and via air $36.50.

Construction permits for mobile weather bureau and radio broadcasting stations, from automobile trucks, in Nebraska and Wyoming, for test communication between planes in flight and the moving ground vehicles, have been granted to Boeing Air Transport, Inc., by the Federal Radio Commission. This is believed to be the first complete station on wheels.

Aerial view of the municipal airport at Montgomery, Alabama. This is one of the largest municipal fields in America. Its total area comprises 912 acres of which 612 acres are improved as landing area. The Southern Air Express has reserved 50 acres for a factory site

NEW AIRPORT DEVELOPMENTS

Greenville, Ala.—A site for a municipal airport was approved by airport specialists who visited Greenville recently as the guests of Greenville Lions Club. Efforts are under way to secure finances for development of the site.

Hialeah, Fla.—Work on the $75,000 airplane hangar at the municipal airport for Curtiss-Wright flying Service was begun recently, when ground breaking ceremonies attended by several prominent city officials were held.

Jacksonville, Fla. —Improvements scheduled to be made at the Jacksonville airport include a 24-inch 3,000,000 cp. revolving beacon, 25 additional marker lights, 50 obstruction lights and improvement of the field's top surface. Estimated cost of the improvements is $8,200.

Cedartown, Ga.—A new hangar has been completed by Charles Adamson, Jr., at the Adamson Aviation Field. The Hangar is of four-plane capacity.

Lexington, Ky.—Lieutenant Jesse O. Creech and Harkness Edwards are working out plans for the proposed municipal airport here.

Baton Rouge, La.—An airport that will meet the Department of Commerce requirements for an A-1-A rating is under construction here. Total cost will be approximately $150,000. The field contains 200 acres, located within four miles of the post office.

Gulfport, Miss.—A municipal airport is to be constructed here. Plans call for the erection of a hangar of six-ship capacity, with space for modern shop and quarters for pilots.

Yazoo City, Miss.—The various civic organizations at Yazoo are making plans for the establishment of a municipal airport following a visit by William J. MacKenzie, airport specialist from the Aeronautics Branch of the Department of Commerce, who approved a site that has been under consideration by the city for some time.

Miami, Okla.—The aviation committee of the Chamber of Commerce has selected two sites as possible locations for a municipal airport. Both tracts have been approved by a Department of Commerce official. A bond issue of $100,000 has been approved for establishment of the port.

Ponca City, Okla.—E. O. Bennett, city engineer, is making plans for building a new hangar, 125 by 210 feet in size, at the municipal airport.

Wewoka, Okla.—The new hangar at the local airport is nearing completion.

Dallas, Tex.—A new hangar costing approximately $105,000 is nearing completion at Love Field. The hangar replaces one recently destroyed by fire. The new hangar has 200 feet frontage on Love Field by 100 feet in depth.

Hillsboro, Tex.—A new field located four miles west of Hillsboro on Highway Number 22 has been approved by local aviation officials and work has begun toward geting it in proper shape. The new field is being built primarily for air mail use onder government contract and will not be available for commercial use.

McAllen, Tex.—A contract has been signed for the purchase of a 200-acre tract located three miles south of the city, for the establishment of a municipal airport. The field will be known as the McAllen-Hidalgo municipal airport. Efforts are now under way to have the Mexican Government designate the field an international airport.

Pecos, Tex.—The Chamber of Commerce has selected a site for a municipal airport. Modern facilities, including a gasoline service station, will be installed.

Port Arthur, Tex.—A $500,000 land and seaplane base is to be built at Sabine Lake near here. Money for building the airport will be rised through municipal bond issue.

Sinton, Tex. — The Aeronautics Branch of the Department of Commerce has approved the 90-acre tract just east of the Sinton city limits for establishment of an emergency landing field. One large beacon light and smaller lights will be installed.

Tyler, Tex.—A hangar, 100 by 110 feet, to cost $12,000, is to be erected at the Tyler municipal airport. The hangar will also provide offices, rest rooms and shops. The 290-acre airport will be dedicated in the spring.

Berryville, Va.—The American Legion and the Chamber of Commerce are considering two available fields on the outskirts of the city as possible sites for a municipal airport.

Brunswick, Va.—The state of Virginia and the city of Brunswick have jointly provided a sum of $2,000 for grading and conditioning an airport here. The field will be completed by summer.

Charlottesville, Va.—The final runway at the local airport has been completed. The field is operated by the Dixie Flying Service. An all-steel hangar with shop facilities and a new administration building for convenience of pilots and passengers are now available.

Danville, Va.—The city council plans to raise funds for the further improvement of the municipal airport here. Approximately $20,000 will be appropriated for improvements, a portion of it to be used for hangars and shops.

Charleston, West Va.—The West Virginia Airways will construct a municipal airport on 150 acres of land in the Union district near Institute. The city has agreed to lease the field to the West Virginia Airways for a period of 25 years commencing January 1.

Airways Official Snapped on Southern Trip

William Gibbs MacAdoo, former director of railroads and Secretary of the Treasury of the United States, snapped as he arrived in Miami a few weeks ago by plane, a Lockheed Vega cabin monoplane, accompanied by Captain J. C. Edgerton, vice president and consulting engineer of Southern Skylines Inc.; Lieut. Harry Ashe, pilot, and Miss Bera Ward, secretary to Mr. MacAdoo. Mr. MacAdoo, chairman of the board of directors of Southern Skylines, is interested in the south for both sentimental and business reasons. He was born in Georgia and has relatives still living there. Later the party took off for Havana by plane.

Gov't. Aid for Cities in Selecting Airports

MARSHALL C. HOPPIN and W. J. Mackenzie, airport specialists from the Department of Commerce, are on an extended tour of the South for the purpose of aiding communities in the selection of airport sites.

Southern cities desiring the assistance of these specialists in selection of airport sites, or wishing information regarding the requirements for the development of suitable airports may have this information free by communicating with the Aeronautics Branch of the Department of Commerce.

One of these itineraries will cover the southern states west of the Mississippi River including Missouri, Arkansas, Louisiana, Oklahoma, Texas, New Mexico and Arizona. The other will cover the states east of the Mississippi and will include Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee and Kentucky.

Aeronautical Personalities

"Prince" Hamer, Explorer, Now Mail Pilot

DOWN the Interstate route between Chicago and Atlanta an air mail pilot wings his way, carrying the air mail from the North into the Sunny South—an unusually interesting flyer—Pilot "Prince" Hamer.

For 18 months this "prince" among pilots lived with head-hunting tribes in the jungle lands of Dutch

"Prince" Hamer

New Guinea. Accompanied by an expedition party of several hundred explorers, sent out by the Smithsonian Institute to search for a tribe of pygmies said to exist somewhere in the interior of the island country, Pilot Hamer flew a seaplane equipped with pontoons for use on island steams, where dense forests covering the jungle country prohibited the use of land airplanes.

Hundreds of black natives were encountered as the exploring party entered the interior of the jungle-covered area. Guides experienced in the ways of the natives went ahead of the party to make way for the expedition. For six months, during the period spent in Dutch New Guinea, Pilot Hamer relates that he saw no white men, other than those in his party.

Flying over the forest lands, the tribe of pygmies was seen from the air, but it required five months for the exploring party to cut its way through the jungles and go by canoes to the interior of the island. Included in the expedition, besides the white men, were 200 convicts, 65 native soldiers and 120 head-hunting dyaks, who were expert canoe men from Borneo, Hamer relates.

Mingling with the native tribes, Hamer learned to know their characteristics. Many of their huts were "decorated" with bones, evidently taken from the bodies of tribal enemies. These were seen hanging about the crudely constructed huts, whether the remains of flesh were taken from them by the natives as "cannibal" food—the exploring party was unable to ascertain.

Brightly-colored beads and sharp-edged knives claimed first place when members of the exploring party offered the natives "trades" for food and other necessities while they were stationed in various sections of the jungle lands. Sometimes they were angered by the presence of the white men, and on occasions it was necessary to quell an uprising, which might have resulted disastrously for the explorers, by shooting into the swarming masses of black natives, Hamer declared. However, only a few such combats occurred during the party's stay on the island.

After returning to the United States about a year ago, Hamer flew for Scenic Airways, out of Phoenix, Ariz., carrying parties of tourists for trips over the Grand Canyon of the Colorado. Last June he accepted a position with Interstate Airlines, Inc., to fly the air mail and passenger line operated by the company. The past several weeks he has piloted one of Interstate's photographic planes over the Upper Mississippi valley, flying with a cameraman who photographed a greater portion of the river area from Hastings, Neb., to St. Louis.

During the air circus held at Tennessee's Sky Harbor, 23 miles southeast of Nashville, on Armistice Day, Pilot Hamer was a participant in some of the events presented by Interstate at its recently completed airport. He has since returned to his air mail run—the "Prince's" favorite pastime.

R. A. Fleming, formerly general traffic manager of National Air Transport, Inc., has been named general passenger agent for the Southwest Air Fast Express.

Southern Air Transport Operations Manager

JERRY MARSHALL, one of Texas' four first air mail pilots, has been promoted to operations manager of the Southern Air Transport division of the Aviation Corporation, to direct, along with other flying activities, the operation of the mail routes over which he once flew. His place in New Orleans, where he has recently been division manager, will be filled by W. K. Ennis; former airport sales manager for the company.

Marshall is well-known as one of the early commercial pilots in the state. During his student days at the University of Texas he organized and operated the University School of Aeronautics, training students in the winter and operating an all-college-students air circus during the summer.

He was one of four pilots to inaugurate air mail in Texas, flying for the Texas Air Transport, Inc., a division of the Southern Air Transport, and was later made manager of the T. A. T. Flying Schools. In that position he developed a system of seven schools over the South, located at Fort Worth, Dallas, San

Jerry Marshall

Antonio, Houston, Amarillo, New Orleans and Atlanta.

In New Orleans a part of his duties consisted in directing the operation of the Gulf Coast Airways, Inc., operating mail routes from Atlanta, via Birmingham and Mobile to New Orleans and to Houston. This experience fits him well for his new position.

She's a Test Pilot at Eighteen Years

A FEMININE test pilot—and at 18 years of age.

Such is Mildred Stinaff, of Akron, Ohio—a test pilot whose job is taking off and landing to test the wearing qualities of airplane tires for a big tire manufacturer in her home town. She spends a large portion of her time in the air, and taking off and landing, under all kinds of conditions, are just a part of the day's work to her.

Although most of her time is spent in traveling faster than most people have ever traveled, Mildred never has ridden on a railroad train. Born in Akron, she has lived there all her life and her only traveling has been by auto, street car, or airplane.

"Some day, when I'm not too busy flying, I hope to take a ride on a railroad train, just for the thrill of doing it for the first time," she said.

When she passed her Department of Commerce tests for her pilot's license, she made the test flights under conditions that would have tested stronger nerves than those of an 18-year old school girl.

Half an hour before, she had seen, from the air, the plane in which she

Mildred Stinaff

had been flying earlier in the day cracked up and "washed out" on a paved highway, while attempting to make a forced landing. She knew that one of her fellow-pilots was in a hospital, unconscious. Yet, she made perfect take-offs and landings and flew her ship like a veteran, winning the commendation of the Department of Commerce inspector.

Pedrick Gets Transport Pilot's License

Jacksonville has a newly licensed transport pilot. Perry Pedrick has recently received the much coveted license from the Department of Commerce Aeronautics Branch.

Pedrick, who has been flying since the fall of 1926, is president of the Pedrick Motor Company, and his aviation activities have been an avocation and sport rather than a business.

Pedrick received his flying instruc-

Perry Pedrick

tion from Laurie Yonge, of Laurie Yonge Flying Service, and made his solo flight September 18, 1927. Since then he has put in 310 hours in the air, which includes many cross-country hops throughout the South and East.

Last winter at the All-American meet held in Miami, Pedrick tied for first place in the OX-5 race, with Lady Mary Heath. The story goes that the lady won. Pedrick has won numerous prizes in competitive contests through the South since his entrance into aviation.

Two other Jaxons hold transport licenses, Laurie Yonge, flying school instructor, and Commander Robert H. Gamble, local sportsman.

Leigh Wade Goes to South America

Lieut. Leigh Wade, army round-the-world flyer and chief test pilot of the Consolidated Aircraft Corporation of Buffalo, is en route to South America in the interest of that company. Lieut. Wade sailed the latter part of November and expects to spend most of the winter and spring in South America.

He will direct the sales work in that country of the Fleet and Husky training planes manufactured by the Consolidated company, as well as the larger passenger carriers such as the Commodore.

During the past year the Consolidated Aircraft Corporation has sold many planes in South America.

F. B. Cann's Remarkable One-Year Record

F. B. CANN, Pitcairn mail pilot who flies between Miami and Daytona Beach, Florida, during his full one year's service in this territory has never been prevented from starting out on his run nor failed to reach his destination on account of bad weather. This is believed by Pitcairn officials to be a world's record for an air mail pilot.

"We know of no other pilot on any mail line who has maintained such a performance for a year," said Fred Schwaemmele, Miami base manager of the Pitcairn air line. "This is due to weather conditions, which are so ideal in Florida."

Mr. Cann started flying for Pitcairn on the Miami-Daytona Beach run December 5, 1928. He has flown approximately 90,000 miles during the year, which ended December 4. On only two occasions has he had to stop on account of minor motor trouble between the two cities. He has carried in his plane approximately 30,000 pounds, or more than 1,000,000 letters, in and out of Miami during the year and is still using the same plane he used when he started.

Cann has had wide experience in flying, having been an army instructor at Kelly Field, Texas, instructor at Park Field, Memphis, Tenn., and a barnstormer. He barnstormed with fearless Tinney, aerial acrobat, after the World War. Later he was associated with George Haldeman in his early commercial operations.

Absence from hills, making it possible to fly at low altitudes and

F. B. Cann

under low ceilings when "soupy" weather prevails, is one of Florida's best attractions, Mr. Cann thinks. He flies on the inland route.

From Air Policeman to "Flying Judge"

THERE was a bank robbery in Pawhuska, Oklahoma. Philip A. Roll was one who volunteered to assist in chasing the fugitives. When the sheriff offered him a horse, Roll said, "No thanks, I'm going by air. My plane is out at the field."

Roll and a friend, Mark Revard, rose into the skies and combed the countryside for miles. While patrolling the territory between Pawhuska and Ponca City, Revard discovered a suspicious looking vehicle going through some wooded section and jolting along as though it were running over native sandstone rock. Upon closer inspection both were convinced that they had discovered the robbers. Roll signaled the sheriff and it was no time before the fugitives were brought to justice. This was Roll's first experience as an air policeman.

When Roll finished law school in 1924 he located in Florida and began practice immediately. Recently he was appointed Municipal Judge of the city of Fort Meyers and attained the surname, "Flying Judge," because it was his custom to fly to cases around the country in his trim little monoplane which is always kept in readiness for him at the municipal field. Lee County is so accustomed to the "Flying Judge" that it has forgotten the novelty and remembers only that Roll arrives on the minute and leaves on the minute.

The "Flying Judge" is now 32. He entered the signal corps of the United States Air Service in 1917 and was sent to Ohio State University where he became a flying cadet. After further training at Garden City, Long Island, and at Rich Field at Waco, Texas, he was commissioned and sent to Gerstner Field, Lake Charles, Louisiana, as instructor of navigation. Here he remained until his discharge in 1919.

After returning to his home he took up commercial flying and barnstormed through Ohio, Indiana and the Middle West. In the fall of 1919 Roll sold his equipment and, with the money obtained, entered law school in Cincinnati. So during the next five years he barnstormed in the summer and studied law during the winter.

When Roll decided upon commercial flying before he had any idea of studying law, he stumbled into an incident which was to form his later career as the "Flying Judge." He made a deal with two fellows in Tennessee to go down to Macon, Georgia, and buy a plane for them. They gave him $400 to purchase the

Philip A. Roll

ship, which was a Jenny, and a few dollars for expenses. Roll concluded the deal with the owner of the plane in Macon and few it to Tennessee after a struggle of five weary days over the mountains, combating rain, soft fields and poor fuel.

Roll was to get fifty per cent of all money turned in from passenger carrying hops. He also piloted the plane and began to experience difficulty in collecting his share because he was in the cockpit when the money was handled. Then one day his two associates suddenly said that they could get a pilot for less money and promptly fired him. After some litigation Roll received $100 for bringing the plane from Georgia to Tennessee, but nothing for the losses which he had sustained on the work already contracted, which was in the neighborhood of $2000.

After such dealings, Roll's chief interests turned toward the laws of aviation and today he is becoming a specialist in the work. He says, "The law of aviation is fast becoming a field in itself. Proper and constructive legislation is necessary both local and general, from the constructive city ordinance to the state enactments to the Federal Constitution. This phase of aviation, I am sure, will reflect credit upon the industry. Our various cities and states are now making it possible to fly over them — not necessarily through legal requirements but from the construction and maintenance of intermediate landing fields and adequate landing fields and adequate airport facilities. Bonded indebtedness is making tremendous operations possible for the comfort and safety of pilots, passengers and equipment. We should encourage constructive laws for they are the tools for the expansion of commercial operating possibilities."

Today Philip Roll is out to safeguard the rights of the aviator through his ability as an attorney just as he is out to get the criminal.

Skeet Perkins, a reserve air mail pilot on the Houston-New Orleans run, has been placed on regular duty on this line.

This is the "Crate" in which Philip Roll and a friend combed the countryside and located the Oklahoma bank robbers

How Moore Keeps the Ships in the Air

CAREFUL attention to detail and taking nothing for granted is one of the most important things in keeping a fleet of transport ships in the air, says Paul Moore, service manager for the Braniff division of the Universal Airlines.

At least, Moore has found this true and practiced it. So well has he practiced it that none of the 38 planes under Moore's control has ever been forced down because of motor trouble in over 1,500,000 miles of flights.

"Telling any other person how we have set up this record is hard. We have just been careful and sure of a ship before we turned it over to the line pilot," he explains.

"In the first place, we make it a practice never to put off a job until some other time. When a ship comes in off a run, several trained men start checking it from the landing gear to the gasoline filler cap. If any part is questioned in the least, the ship is moved to the shops and a new part put in.

"After mechanics finish their inspection the ship is given a good bath, after which a wing expert checks the covering. Care of a ship's cloth or metal is just as important as care of the motor."

Moore pointed out that this is particularly true on a metal plane. When a section of the metal covering comes loose, it is apt to put the plane into difficulties, where it might not make any material difference in the

Paul Moore

flight of a cloth-covered ship.

He recalled the case of a tri-motored transport from the city port being forced into a tailspin by a section of the covering coming loose. In this case the resistance of the bit of sheeting was greater than the controls could overcome.

After this procedure is finished the plane is stored in a dry heated hangar to await its call into service.

When the call comes the ship is due for still more inspection before the pilot takes his seat behind the controls. When the ship is ordered out, fresh batteries are connected to the night flying equipment, fresh ice water in the cooler, and the machine wiped off and the gas and oil supply checked before the motor is started.

After the motor has been warmed up, Moore or the operations manager taxies the plane over the field to check the motor. It is then ready for the pilot.

Moore started in aviation back in the days when rebuilt army planes were the only commercial planes. He bought two and started to seek his fortune barnstorming over the country. The old crates refused to stay up, however, and Moore's fortune crashed with them.

A little over a year ago, Paul R. Braniff started the Braniff Airlines with one ship, a Stinson, operating between Oklahoma City and Tulsa. Moore left the automobile business, which he had resumed when his own aerial venture failed, and joined the Braniff organization.

WHEN Lieut. J. M. Gillespie, Staff Sergeant Dwight M. Capps and Richard M. Bremer, members of the 96th Bombardment Squadron of Langley Field, Va. jumped from their disabled plane near Goodwater, Ala., December 4, they brought the number of lives saved by parachutes in this country up to the 200 mark. The membership of the Caterpillar Club has doubled within the past fifteen months.

Lieut. E. E. Dildine, with 6,000 hours flying experience, including 1,200 hours instruction to army and navy fliers, has resigned as chief flying instructor at the U. S. Navy Air Base at Sandpoint, Washington, to be associate flying director at the Boeing School of Aeronautics. Dildine is the holder of No. 1 license for combat pilots.

Kansas City Girl Stars in Good Will Tour

A KANSAS CITY girl, Miss Mildred Kauffman, is out to set a record in the matter of speed in piling up hours for a transport pilot's license.

When Miss Kauffman left Kansas City several weeks ago as one of the featured pilots with the American Eagle Aircraft Corporation's Goodwill Tour, she held a limited commercial pilot's license.

Flying with the Tour through Kansas, Oklahoma, Texas, New Mexico, Arizona and California, Miss Kauffman was scheduled to have sufficient air time to be eligible to attempt to qualify for her transport license when she returned to Kansas City early in December.

Miss Kauffman has been flying about two years but only recently took up aviation commercially. She first attracted attention when she literally ran away from the field in the women's race in the Air Circus held at Fairfax Airport last Septem-

Mildred Kauffman

ber. She handled her plane so adroitly that she won by nearly a half lap.

A lion's share of the honors on the American Eagle Goodwill Tour have gone to Miss Kauffman, who had done virtually no cross-country flying until she joined the tourists. At every stop she has been besieged by persons desiring to ride with her.

At one stop in California two business men, avowed anti-aviationists, raced each other to Miss Kauffman's plane and asked that they be taken aloft. Surprised when she told them both to climb in, they were initiated into the thrills of sky riding, and became ardent converts.

General News of THE AVIATION INDUSTRY

Plans for St. Louis Aircraft Show

THE premier presentation and advance showing of the aeronautical industry's 1930 products will be seen at the International Aircraft Exposition under the sponsorship of the industry's trade organization, The Aeronautical Chamber of Commerce of America, Inc., at St. Louis, February 15th to 23rd. The announcement comes from Charles L. Lawrence, chairman of the show committee of the Aeronautical Chamber.

Plans for the biggest show of the year for the air industry are being rushed to completion by Clifford W. Henderson, manager of the Show Section for the Aeronautical group, with a corps of workers at the Jefferson Hotel, St. Louis headquarters. Following their established policy of holding but one Class "A" International and National Show each year, the Chamber is planning to receive a greater number of exhibits for display at the new $2,000,000 St. Louis Arena, than at any previous exposition. Every phase of the aeronautic industry will be represented and will include not only American but foreign products also.

It will be the first time since December, 1928, that the Aeronautical Chamber of Commerce has sanctioned and sponsored an international show. The 1928 exposition was held at Chicago in conjunction with the International Aeronautics Conference called by President Coolidge to celebrate the twenty-fifth anniversary of the first flight of man in a heavier-than-air craft.

In addition to the exposition, which will initiate a gigantic international selling and merchandising program expected to be far reaching in its stabilizing effect throughout the entire industry, Henderson is preparing an elaborate and colorful pageant to be staged nightly in the Arena. The evolution of transportation from earliest history to man's conquering of the air, will constitute its motif.

All Types on Display

Virtually every type of aircraft, ranging from the smallest single and two-place sport and training planes, to huge multi-motored transports, will be on display and will occupy the two wings of the large Arena. Numerous models of the popular amphibian type plane will also be exhibited.

Arrangements are being made to provide an aerial service from the adjoining landing field to nearby airports where practical demonstrations of the latest models will be made to the trade. Aircraft, for display at the exposition, will be landed prior to the show at the adjacent field and towed to the exhibit building.

Hundreds of the leading executives in the air industry, noted pilots and engineers, all will be drawn to St. Louis for the series of group conferences and meetings between manufacturers of aircraft, engines, instruments and accessories, engineers' and pilots' organizations and the component departments of the Aeronautical Chamber of Commerce. Among the groups scheduled to participate are the following: Society of Automotive Engineers, Bureau of Aeronautics Branch of the Department of Commerce, Commercial Airplane Manufacturers, Motor Manufacturers, Air Transport, Flying School, Airport, Distributor-Dealer, Accessory-Materials, Fuel-Lubrication and Finance Insurance sections of the Chamber.

Due to the extensive development and expansion of the Pan-American air services during the past year, it is felt that this market will become even more active in 1930. The colorful close-up of the greatest aeronautical display to be concentrated at the centrally located St. Louis exhibit, affords the Pan-American market an excellent opportunity to view the latest models in aircraft design and manufacture together with the allied products. The exposition should prove of mutual benefit to the southern trade and the national manufacturer, especially in view of the vast field embraced.

Plans for the show have been under way for more than six months. The Show Committee of the Aeronautical Chamber of Commerce considered proposals submitted by several other metropolitan cities before St. Louis was finally selected.

Aerial view of the St. Louis Arena, where the International Aircraft Exposition will be held, February 15-23

The members of the Chamber Show Committee are: Charles L. Lawrance, Chairman, vice-president of the Curtiss-Wright Corporation; C. J. Brukner, Waco Aircraft Company; C. V. Cessna, Cessna Aircraft Company; C. H. Colvin, Pioneer Instrument Company; T. Z. Fagan, Scintilla Magneto Company; E. N. Gott, Keystone Aircraft Corporation; H. M. Hanshue, Western Air Express; P. G. Johnson, Boeing Airplane Company; H. C. Lippiatt, Southern California Travel Air Distributor; H. P. Mammen, Parks Air College; W. B. Mayo, Ford Motor Company; H. C. Ritchie, General Electric Company; F. H. Russell, Curtiss Aeroplane and Motor Company; A. A. Woodruff, Fairchild Airplane Company; Major G. A. Vaughn, Jr., Eastern Aeronautical Corp.; and Major P. G. Kemp, Central Air Terminals.

Remarkable Record for Graf Zeppelin

A RECORD said to be without parallel in the annals of flight, stands to the credit of the Graf Zeppelin, pride of German airmen, as the dawn of 1930 brings aviation's most notable year to a close.

Since it was commissioned on September 18, 1928, until it was laid up for general overhaul on November 15 last, the great dirigible made 50 flights, totalling 116,985 kilometers or about 73,000 miles, approximately equal to three trips around the globe. These flights, ranging up to 7,000 miles, averaged 1,462 miles each and included a 'round-the-world trip, five crossings of the Atlantic and one crossing of the Pacific.

On them, the Graf Zeppelin's Maybach engines consumed a total of 8,300,000 cubic feet of gaseous engine fuel; 168,000 pounds of liquid fuel; 31,200 pounds of lubricating oil; carried 1,574 passengers, 820,000 pieces of mail, 34,500 pounds of food, 36,250 pounds of beverages and 87,500 pounds of useful load.

Remarkable among its many nonstop air voyages were these flights of the Graf, all of more than 3,000 miles:

Oct. 11-15-1928 — Friedrichshafen-Lakehurst; 6,200 miles.

Oct. 29-Nov. 1—Lakehurst-Friedrichshafen; 4,570 miles.

Mar. 25-28-1929—Friedrichshafen-Palestine and return; 5,000 miles.

Apr. 23-25 — Friedrichshafen-Spain and return; 3,375 miles.

Aug. 1-5—Friedrichshafen-Lakehurst; 5,120 miles.

Aug. 7-10—Lakehurst-Friedrichshafen; 4,400 miles.

Aug. 15-19—Friedrichshafen-Tokio; 7,050 miles.

Aug. 23-26—Tokio-Los Angeles; 6,000 miles.

Aug. 27-29—Los Angeles-Lakehurst; 3,000 miles.

Sept. 1-4—Lakehurst - Friedrichshafen; 5,250 miles.

Oct. 15-17—Friedrichshafen-Silesia and return; 2,975 miles.

Oklahoma University Plans "Flying Faculty"

What is believed to be the first "flying faculty" from a state university is in the process of formation at the University of Oklahoma, to aid the state dental society.

The proposed flying faculty is a part of the extension department of the University and will make regular lectures at five cities scattered in as many sections of the state. Under the present system, L. W. Kibler, head of the department says, too much time is taken from the university instructor's regular class time in going to and from the lectures.

It has not been decided whether the dentists will purchase a plane for the work or charter one for each individual trip. Present plans call for installation of the system during the second half of the school year.

William P. McCracken, Jr., former assistant Secretary of Commerce for aeronautics, will practice aviation and general law with central offices in Washington. He will act as special counsel for the New York, Rio & Buenos Aires Line, the Goodyear-Zeppelin Corp., and Western Air Express.

F. F. Frakes of the Interstate Airlines, Inc., operators of the direct airline from Chicago to Atlanta, recently assumed charge of the company's sales headquarters in the Hermitage Hotel, Nashville. Mr. Frake's district includes Tennessee and northern Alabama.

A NEW feminine loop record was established November 25, when Miss Dorothy Stocker, of Houston, Tex., looped an Eaglerock 28 times in succession. The former record was said to be 22 consecutive loops. Miss Stocker is a graduate student of Glenn L. Loomis, Eaglerock distributor at Houston.

Army Making Radio Communication Experiments

EXPERIMENTS in long distance radio communication between aircraft and permanent ground stations are being staged by the Army Air Corps over an imaginary front extending from Michigan to Spokane, Washington, by way of Duluth, Grand Forks, Glasgow and other intermediate points to Spokane.

Their return route will take them to Helena, Butte, Miles City, Bismarck, Fargo, Minneapolis and other stops.

The experiments are being conducted in cooperation with the American Radio Relay League.

The tests will be made in connection with winter maneuvers of the First Pursuit Group which will bring into play an extremely realistic combat with King Boreas and his shock-troops—snow, ice and sub-zero temperature—over a 3,000 mile "battle front."

To measure the endurance and efficiency of Army Air Corps personnel, planes and equipment in a section of the country where the mercury in the thermometer hibernates at 40 below zero and lower during the early part of the year, and to test the value of short-wave radio as a means of contact between Army air units operating in isolated regions and remote posts of command.

The flight will consist of 18 pursuit planes and two Army transports under command of Major Royce.

Bennett Griffin has been named field manager at Oklahoma City, Okla., for the Curtiss Flying Service, following the resignation of Clint Johnson.

Following his resignation Johnson organized a new flying school under his own name and was appointed distributor for Spartan planes in this trade territory.

"Aviation Week" Is Held In Mexico City

By Douglass Grahame

INTEREST in civil aviation in Mexico, which has increased to a remarkable extent since Col. Charles A. Lindbergh's visit two years ago, was further stimulated by the success which attended "Aviation Week," December 10-16. This seven-day event, during which commercial and military planes of the most modern design were demonstrated and the latest aircraft accessories were on exhibition, attracted national attention.

According to estimates made by the Mexican Association of Aeronautics, under whose auspices the show was conducted, more than 35,000 persons paid admission to the special field at the Central Civil Airport which was the theatre of the affair. During the day of the special race for civil planes a crowd estimated at 200,000 watched from within and outside the arena.

Proceeds from the sale of tickets and the entry fees of planes for the various events, will be distributed among the civilian aviation schools functioning in Mexico, the Association announced. Revenue from the event was approximately 30,000 pesos. The major part of these donations will be to the Emilio Carranza School of Civil Aviation in Mexico City.

This aviation demonstration was called "Aviation Week, Captain Emilio Carranza, 1929," in honor of the heroic Mexican Army flier who perished in July, 1928, while attempting a non-stop flight from New York to Mexico City. The show was the first of its kind to be held in Mexico and so well pleased are the sponsors with the results that they announce a similar exposition for 1930.

Excursion rates offered by the Mexican Aviation Company, which links the Mexican capital with Brownsville, Tex., and increased land transportation facilities enabled thousands of residents of the provinces to visit their metropolis. It is reasonable to say that practically all of these visitors returned to their homes "air-minded". The aviation company did a land office business during the week, both in bringing people to the Air Meet and in taking passengers to the United States and cities in Mexico on its routes for the Yule holidays.

This company also did well with taxi business at the show field. A Ford tri-motor plane was assigned to taxi service and was on duty from early in the morning until sundown. On the day he inaugurated the celebration, President Emilio Portes Gil took a trip in this plane over the Valley of Mexico and the two famous volcanoes which are a few miles back of the capital.

D. Morgan Hackman

Aviation representatives of six nations, besides the United States, which latter sent four Army planes and six officers, were on hand for the show. The foreign visitors were accorded the utmost hospitality and their stay was one continuous round of festivities.

As it happened, the "Week" was staged at the beginning of an ancient Mexican festivity "Las Posadas" or the Yule celebration. This seasonal merrymaking lasts for nine days in Mexico, and the foreign aviators, both military and civil, were guests of honor at the public and private "fiestas" which feature this celebration.

The nations represented by "diplomats of the air" were: Great Britain, Flight Comander Lionel O. Charlton of the Royal Air Force; Italy, Commandante Ronaldo Escaroni of the Royal Army Air Service; Brazil, First Foreign Secretary A. Moreira de Abreu; Guatemala, Auturo Aguirre Matheu, chief of the Department of Civil Aeronautics; Honduras, Andreu Aldubin, Minister to Mexico; and Costa Rica, L. de Villafranco, charge d'affaires of the Mexican legation.

The United States delegation was headed by Major Clarence L. Tinker, of Kelly Field. Besides the plane in which the comander flew, a Curtiss bomber from Langley Field, Va., a combat plane from Fort Crockett, Tex., and an observation ship from Kelly Field, attended. Two planes bearing six passengers each also flew to Mexico from the United States for the show. These were the official planes of the Los Angeles and San Francisco Chambers of Commerce.

Practically all the visiting planes were from the United States. The

Valbuena Field, Mexico City. Photo by Fairchild Aerial Survey

American air visitors were accorded the heartiest welcome and one of the most impressive phases of the show was the flight of welcome by Mexican pilots in honor of the visiting aviators.

Sixteen American commercial planes took part in the demonstrations, entered by the following manufacturers: Gates Aircraft Corpn., New York, Travel Air Company, Wichita, Kans., Fairchild Aviation Corpn., New York, Acme Aircraft Corpn., Rockford, Ill., Alliance Aircraft Corpn., Alliance, O., Butler Mfg. Co., Kansas City, Corland Lord Aircraft Co., San Antonio, Tex., Curtiss Aeroplane & Motor Co., New York, Spartan Aircraft Co., Tulsa, Okla., American Eagle Aircraft Corpn., Wichita, Kans., Golden Eagle Aircraft Co., Los Angeles, Timm Aircraft Co., Glendale, Cal. Kroutzer Aircraft Corpn. Los Angeles, Cessna Aircraft Co., Wichita, Kans., and the Lockheed Aircraft Corpn., Burbank, Cal.

Among the ships exhibited and demonstrated by the Mexican Army Air Force and private owners of Mexico were such planes as Azcarates, Douglases, Stearmans, Avions, Fords, Corsairs, Keystones and Fleets.

In all, 57 planes took part in the derbies, demonstrations and exhibitions. The largest hangar at the military airport at Valbuena Flying Field was given over to the exhibition of planes and aircraft materials. Among the companies were the following: Molk Aircraft Co., Land B. Aircraft Corpn., Superior Aircraft Corpn., Vim Aircraft Corp., Garland Air Sales Co., and Bookhedd Executive.

An American, D. Morgan Hackman, piloting a Fairchild KR-34, won the speed races for civil planes and received the trophy, a handsome cup, donated by the Mexican Association of Aeronautics for this event. Pilot Hackman was the guest of honor at a banquet tendered by Mexican civil and military flyers.

A feature of the celebration was the feat of Senora Enriqueta Mendoza de Perez, a Mexican aviatrice, in jumping in a parachute, 1200 feet from a plane above the show field. She received the personal congratulations of President Portes Gil and a silver loving cup donated by Army flyers for this exploit.

That the Mexican Association of Aeronautics attained its objective with "Aviation Week" is proven by the fact that there has been noticeable increase in applications for enrollment in the various civil aviation schools throughout the Republic since the event.

Women Pilots Organize "Eighty-Sixes"

THE first organized association of women pilots in America, and perhaps the first in the world, was recently formed in New York. The association is known as the "Eighty-Sixes," signifying the original membership of the organization.

The purpose of the organization is to promote good fellowship among licensed women pilots. The association was organized at the home of Mrs. George Kunz. It includes members from all sections of the United States. Any licensed woman pilot is eligible for membership.

Sectional chairmen of the association are as follows: Gladys O'Donnel, West Coast; Phoebe Omlie, Middle West; Joan Shankle, New England; Louise Thaden, Pennsylvania; Blanche Noyes, Ohio and Michigan; Laura Alexander, Southeast section; and Margaret Thomas, Texas.

Tennessee Program to Aid Aviation

A division of aeronautics, under the supervision of the state highway department, is the first step toward placing Tennessee in the forefront for air lines, emergency landing fields and permanent airports, Commissioner of Highways R. H. Baker declared in a statement setting out in detail the financial program of the highway department for 1930.

The governor's program includes the aeronautical measure which, if approved, will immediately lead to emergency landing fields between the principal cities of the state, prove a medium for the attraction of national airways, and place Tennessee in position to receive anticipated government aid in the establishment of permanent airports throughout the state.

This measure was, in a way, tried in the regular session, but lacked the vital question of "self-support," and failed to provide for other than an inadequate system of emergency fields. Representative Larry Hughes, of Memphis, offered the solution of the problem whereby the division could be supported by the 5-cent gas tax collected on aviation fuels. This gas tax has been going to the highway fund with all other gas taxes, but the airplane doesn't benefit by highways, thus the plan to divert this tax for the improved safety of state air lines.

Navy Department Sells Its Carrier Pigeons

THE carrier pigeon, one of the oldest and most romantic means of communication, has played an important part in the advancement of aviation and the saving of the lives of men who go up in the air in ships—but the day of its usefulness is over, the Navy Department has decided.

This was attested a few weeks ago when the Navy Department ordered the sale of all carrier pigeons belonging to the flying forces of the United States Navy. The pigeon loft at the Hampton Roads Naval Air Station, Norfolk, Va., with its 75 feathered fliers, sold for $60.25.

In days past, before the radio had been perfected to its present stage, naval regulations required that two carrier pigeons be taken on every flight made and naval records are replete with instances where these birds have brought back messages of forced landings and calls for help that resulted in the saving of many human lives.

Charles R. Coachman, of Palm Beach, Fla., former Naval officer and a former student in the Limited Commercial Pilot's course at Parks Air College has been retained by the Garland School of Aeronautics at Tulsa, Okla., as an instructor in meteorology and navigation. Coachman was an ensign in the naval service in the World War and prior to coming to Parks Air College was engaged in the mahogany lumber business in South America.

Baltimore Show Draws 50,000 Attendance

Annual Aircraft Show in Baltimore Assured by Success of First Held in City

SUCCESS crowned the first aircraft show ever staged in Baltimore, Md. More than 50,000 persons attended the event, which was held the week of December 9. It was a success both financially and in the general interest it aroused in aviation and things aerial.

On the opening night more than 13,000 persons attended. The closing nights saw an even greater attendance, indicating the "aerial" interest that had been aroused as the event progressed. Exhibitors reported that some of the planes exhibited were sold "on the floor" and that tentative purchases were made on others. Because of the unusually bad weather that prevailed here during the early part of the event, several of the entries were unable to be present. Storms held up planes from the South and Middle West.

So well pleased with the results were those who were responsible for Baltimore's first annual Aircraft Show, that officials of the show announced that the continuance of the show as an annual affair in Baltimore was already assured. Preparations for the 1930 aircraft show of Baltimore will get under way in the near future, it was announced by Ray Krimm, who directed the show, under the sponsorship of the Flying Club of Baltimore, and with the approval of the Baltimore Association of Commerce and the endorsement of the aircraft division of the Aeronautical Chamber of Commerce of America. Mr. Krimm, it will be recalled, successfully directed, this year, aircraft shows at Philadelphia and Pittsburgh.

Exhibitors greeted the announcement for a show next year with enthusiasm and some of them pledged their support. Mr. Krimm said in commenting on the success of the event: "Baltimore has proven herself airwise and capable of supporting another and even larger show. The show, I have been told, was one of the most successful ever staged, including national and international exhibits. Of course we did not try to equal some of the other shows in size, but we do feel that this show was, in proportion, one to be regarded as an outstanding success."

Notables at the first Baltimore Aircraft Show. Left to right, Lt. Seaman, Detroit, Van Lear Black, Baltimore, and Governor Ritchie

Lyman H. Johnson, head of the aircraft section of the Aeronautical Chamber of Commerce of America, substantiated Mr. Krimm's statement on the success of the show, when he said: "Baltimore should be proud of the name written for her in the history books of the aeronautical industry by the success of this show. I believe that the splendid support shown by the aircraft enterprises in this territory was partly responsible for the show's smooth going." Mr. Johnson said he was very much impressed by the preliminary arrangements for the show and surprised to find such a large number of planes entered for a local exhibition.

Dr. Hugh H. Young, chairman of the Maryland State Aviation Commission and chairman of the show committee said: "Maryland, and especially Baltimore, is going to benefit by the splendid success of this show. It has aided greatly in creating the necessary interest in aviation to place our State at the top of the air map of the country."

Many Planes Exhibited

Exclusive of the booth exhibitions, the aircraft exhibit represented a valuation of approximately $142,000. The highest-priced plane in the show was the Bellanca cabin monoplane, priced at $15,000, while the lowest-priced plane was the Monoprep, a sport monoplane, that was priced at $2,500.

Pitcairn Aviation, Inc., carried nearly 10,000 special air-mail letters from Baltimore, because of the special air mail cachet featured in connection with the event.

Model planes were also exhibited in connection with the event, more than 80 models being entered by old and young airplane designers. Prizes were offered for these exhibits, the best models being rewarded. Models of every design were on exhibition, ranging from models having a wing spread of less than half an inch to those having a wing spread of six feet.

The famous Travel Air "Mystery Ship" was included in the plane display at the show, the first time it was entered in an indoor aircraft exposition. Capable of a high speed of 228 miles per hour, the plane, a low-wing monoplane powered by a Wright 300-horsepower engine, is called the fastest commercial airplane in the world. It has a wing span of 28 feet, 4 inches, and is 28 feet in length.

The plane display included the complete line of the Fairchild Manufacturing Corporation, of Farmingdale, L. I., and the Kreider-Reisner Aircraft Company, Inc., of Hagerstown, Md., several of which were exhibited by Robert J. Stewart, one of Baltimore's pioneer pilots, and the Fairchild representative in this section.

The Curtiss-Wright Flying Service, Inc., through William D. Tipton, general manager of the Baltimore office of the concern, was the largest single exhibitor in the show with an entry of nine planes manufactured by the various Curtiss subsidiaries and other manufacturers whom the Curtiss sales organization represents. Their exhibit included

a Cessna monoplane; two Curtiss Robins, each with a different power plant; two DeHaviland Moths; two Travel Air monoplanes; a Travel Air biplane and a Keystone-Loening Commuter.

Major Temple N. Joyce, vice-president of the Berliner-Joyce Aircraft Corporation, of Baltimore, entered two of his company's sport-and-training monoplanes.

The Doyle Aero Corporation, Baltimore's pioneer aircraft manufacturing company, entered two of the organization's two-place monoplanes.

The Verville Aircraft Corporation, of Detroit, Mich., had an interesting entry in its Verville Air Coach. This machine is capable of carrying three passengers, a pilot and 100 pounds of baggage. The plane was sold to Henry DuPont, of Wilmington, Del.

Baltimore Airways, Inc., operators of the Baltimore-New York daily air service, was represented in the show with an exhibit of Bellanca monoplanes and a Brunner-Winkle Bird. Edward Handler, president of Baltimore Airways, Inc., was in charge of the concern's exhibit.

The Pilots & Mechanics Flying Club, of Logan Field, Baltimore, Md., which was organized recently, exhibited a Monoprep, a small-two-seater open cockpit monoplane.

The Maryland National Guard Aviation Unit had two entries in the show, being represented by a Consolidated O-17 and a Curtiss-Falcon.

International Airways, Inc., owners and operators of Hoover Field, were also represented at the show with entries.

Besides the exhibits by the aircraft manufacturers, booths were maintained by manufacturers of aircraft accessories, and also by industries closely allied to the aircraft industry.

The "flying radio broadcasting laboratory" property of the Pilot Radio and Tube Corporation, of Brooklyn, N. Y., was an interesting feature of the event. The "laboratory" was delayed by bad weather until the last two days of the show. It was scheduled to broadcast daily radio programs during the tenure of the show.

Elaborate lighting effects, including floodlights and revolving beacons, were features of the show, and enhanced the setting of the exhibits considerably. The armory was brilliantly illuminated and decorated. A specially designed ceiling with an "aviation motif" was used.

State and city officials attended the show, in addition to aircraft manufacturers, manufacturers of aircraft accessories and allied lines, and notable pilots, aviators and aviatrices. Among the notables were Albert C. Ritchie, governor of Maryland; William F. Broening, mayor of Baltimore; and Cliff Henderson, director of the National Air Races.

Special attractions featured each day. Then too, the afternoons and nights were set aside in honor of some distinguished state or city official, aviator, pilot, aviatrix or flying club and other organizations. For instance, among those thus honored were Governor Ritchie, Mayor Broening, Captain Frank Hawks, Blanche Noyes, the Flying Club of Baltimore, and others.

"Props" Travel Ten Miles a Minute

IN ORDINARY flight, the propeller tips of each Southern Air Transport passenger plane travel more than 10 miles a minute, according to Jerry Marshall, operations manager of Southern Air Transport, Inc.

"Each steel propeller is nine feet six inches long," Marshall explained, "and at cruising speed each revolves between 1,600 and 1,650 times a minute. Figure it out and you will find the tips travel 10 miles a minute, or 606 miles an hour. On the take-off and when the plane is climbing, the motor is 'reved' up considerably more, which means considerable more speed for the propeller tips, all in addition to the forward speed of the plane."

Eighty-four exaggerated "bounce" landings were made in two days recently on a new split-type landing gear developed for the Parks P-1, which has recently been named the Parks "Courier." The rough landings were made by five Parks pilots who took turns "pancaking" the plane and flying it "into the ground" after the manner of novice flyers. The gear was undamaged by the rough handling. It has since been approved by the United States Department of Commerce, Parks officials state.

Cann Holds Record

Fred B. Cann, Pitcairn air mail pilot between Miami and Daytona Beach, ended his first year's flying for the company, December 4, and is believed by Pitcairn officials to hold the world's record for an air mail pilot, having flown his course every day during the full year, traversing 90,000 miles and carrying 1,000,000 letters.

S. A. S. Men Skillful "Seamstresses"

TO "SIT on a cushion and sew a fine seam" was formerly considered the acme of femininity. Mechanics employed by the aircraft repair department of Southern Aeromotive Service, Inc., dispense with the cushions but they can sew as fine a seam as the most skilled seamstress, according to H. B. (Pete) Taylor, general manager.

Men are employed altogether in the aircraft repair shops of the company, he said and are as skillful as any woman in measuring, cutting and sewing.

A measuring tape, rather than a pattern, is used in cutting a new "dress" for an airplane. From 100 to 150 yards are needed for a complete re-covering. In most cases, the covering is cut out and sewed together and then slipped on the wing or fuselage like a pillow case. Careful fitting, however, is necessary.

About 600 to 1,000 yards of linen are used a month at the Dallas shop of the company, where eight men are employed in the recovering department. This does not include the linen used by the other stations over the South.

Curtiss-Wright Wins the Guggenheim Award

The Curtiss-Wright Corporation, designers and manufacturers of the Tanager, winner of the Guggenheim Safe Aircraft Competition, have received a check for $100,000.

C. M. Keys, president of the Guggenheim safe aircraft fund presented the check to Captain Emory S. Land, vice-president of the Curtiss-Wright Company.

A crowd of 200 persons gathered at the airport to witness the presentation of the prize, and a demonstration flight of the Tanager.

Notable Recognition of Heroic Rescue

AFTER making a flying trip to Kelly Field, San Antonio, to receive the commendation of Air Corps officers in recognition of his outstanding valor in rescuing two military airmen from a burning plane at the risk of his own life, Frank R. Long, Texas farmer-hero, is now back at his home near Gulf, enriched materially and otherwise for his daring deed.

Both figuratively and literally, it was a flying trip for Long. He was flown to San Antonio and was returned to his home in an army airplane piloted by First Lieut. Bernard S. Thompson, operations officer of Kelly Field—and, incidentally, it was Long's first airplane ride. He returned to his farm the following day.

The informal reception arranged for Long at Kelly Field by officers on duty there about a month after the ill-fated accident, which occurred October 5, consisted of presenting him with a gold watch and offering him their glowing tributes. He had previously received letters of commendation from the late James W. Good, secretary of war; Maj. Gen. James E. Fechet, chief of the Air Corps; Brig. Gen. Frank P. Lahm, commanding the Air Corps Training Center, and Maj. James E. Chaney, commandant of Kelly Field.

Lieut. W. K. Moran, Kelly Field officer, and Sgt. William S. Canedy, of Brooks Field, were the two men whom fate singled out for the disastrous flight. Sgt. Canedy died a week later from his burns, but Lieut. Moran is now on the road to recovery.

At the time of the fatal journey the two airmen were engaged in a cross-country flight in a DeHaviland two-place plane. Two hours after leaving San Antonio, when miles from their home airport, the motor of the ship began to miss at 2,000 feet altitude.

A descent of 500 feet was made when suddenly the craft burst into flames. Quickly Lieut. Moran signaled Sgt. Canedy to jump with his parachute, but the officer failed to determine whether or not he had, and in the meantime the plane was losing altitude.

To prevent the flames from being blown into their faces by the propellor draft, Lieut. Moran, by masterful flying ability, side slipped the ship to earth. The terrain was rough and the craft overturned in the forced landing that was effected about 50 feet from Long's house, located four miles northwest of Gulf.

Left to right: Lieutenant W. K. Moran, Frank R. Long, and Major James E. Chaney. Major Chaney is presenting Mr. Long with a gold watch in recognition of his heroic efforts in rescuing two army fliers from a burning plane that crashed near his home in Texas. Photo by 22nd Photo Section.

Long immediately rushed out, and taking in the situation at a glance, dashed toward the burning airplane. Lieut. Moran had been thrown clear of the ship when it upset. He was, however, knocked unconscious and was lying only 10 feet from the burning wreckage which had fired the grass around it. Sgt. Canedy, with a broken leg and his clothing ablaze, was trying frantically to free himself from the rear cockpit.

Braving the peril of a possible explosion from the gas tank and unmindful of being severely burned, Long seized Lieut. Moran and dragged him to safety. He then went after Sgt. Canedy, approaching the burning inferno without hesitation, and pulling the non-commissioned officer away, at the same time snuffing out the fire on the sergeant's clothing with his bare hands. The farmer-hero was severely burned about the hands and face, and his head was badly blistered in his daring rescue.

When the informal reception was held November 7 at Kelly Field, Lieut. Moran was still confined to the hospital with his injuries, but, limping, he betook himself to the simple ceremony to thank his rescuer.

Long marveled at the speed made by the plane on his first aerial ride —a fact that impressed him most. The distance, 170 airline miles, was traversed in one hour and 25 minutes.

In view of the fact that he had seen a plane crash, the Texas farmer-hero might have been pardoned for declining a proffered ride, as did Sgt. Alvin York, outstanding World War hero, in recently rejecting a lift from his Tennessee home to Washington because he did not want to worry his aged mother who disapproved of his flying.

But on the contrary, Long's acceptance is characteristic of popular confidence in the airplane, such as displayed by passengers on a Western Air Express plane lately forced down by a snow storm in New Mexico who continued their aerial journey and stated they were not through with flying.

Rhenstrom Promoted by Aviation Corpn.

E. G. RHENSTROM, former chief of the technical staff of Southern Air Transport, has been promoted to the operations department of the Aviation Corporation, according to recent announcement by Tom Hardin, director of operations of the Aviation Corporation.

Rhenstrom was formerly operations manager of the S. A. T., directing flying operations of that company from Atlanta to the Rio Grande. In his later post, he developed a system of logs, forms and records that has been adopted by the Aviation Corporation as the simplest and most adequate yet devised.

"Swede," as he is familiarly known at flying fields over the Southwest, learned to fly during the war and made an impressive record in aerial combat. After the war he spent a few years in general sales work before turning to commercial aviation. He was for some time assistant manager of the Fairchild Aerial Surveys at Dallas before being transferred to the sales department of the Fairchild Aviation Corporation with the Chicago and New York branches. Later he joined the Southern Air Transport to assist in the expansion of its flying activities from the operation of two mail lines to its present scope.

Curtiss Wright Corp. Forms Exhibition Company

AN EXHIBITION company to demonstrate the various types of planes designed and manufactured by the Curtiss Wright Corporation will be organized early in the spring, according to Major E. H. Brainard, president of the Curtiss Wright Corporation, and vice-president in charge of operations of the Curtiss Wright Flying Service.

"While our plans," Major Brainard said, "are still in the process of being formulated, the purpose of the Curtiss Wright Exhibition Company will be to demonstrate modern airplanes to the widest possible audience. To accomplish this, we intend to assemble a team of crack pilots who will tour the airports of the country at each of which they will give demonstrations. Their planes will represent the most recent and interesting types developed."

"In forming this new company, we have gone back to the theory of aviation development which was in practice at the time when the World War suddenly turned the attention focused on the airplane to its utility as a military weapon. Up to this time, the old Curtiss company and the old Wright company each had an exhibition company in the field demonstrating flying to the public.

"One of the most important factors in the usefulness of the Curtiss Wright Exhibition Company to the industry, as a whole, will be its mobility. It will be able not only to visit the great airports of the country where air mail, passenger transport and the other numerous operations already exist, but to bring modern flying to the doorstep of the average citizen in communities still removed from the traveled ways of air transportation.

The officers of the new company, in addition to Major Brainard as president, will be David Visel, vice-president; H. D. Norris, vice-president and general manager; and N. A. Nelson, secretary-treasurer. The directors will be: William F. Carey, chairman of the board; Major Brainard; J. A. B. Smith; C. S. "Casey" Jones; Chester W. Cuthell; David Visel; R. W. Schroeder; and W. H. Pickens will act as show manager.

Mr. Norris recently conferred with Major Schroeder in Chicago upon the details connected with organizing the field equipment and personnel of the company. It is expected that full details of the company's plans will be made soon.

NIGHT air mail service on the Atlanta-Miami link of the New York-Miami route is to start soon. The series of beacon lights from Atlanta to Miami is about complete. The chain is already complete from Atlanta to Jacksonville, only those between Jacksonville and Miami remaining uncompleted. Night air mail service out of Jacksonville will save twelve hours in the delivery of mail to other points in Florida, according to A. P. Kerr, Pitcairn official in Florida.

N. H. Anderson, stress analysis expert of the manufacturing division of Parks Air College, Inc., has been transferred to the engineering staff of Detroit Aircraft Corporation, of which Parks Air College is a subsidiary. John H. Thomas, another member of the Parks engineering staff has been transferred to the staff of the Ryan Aircraft Corporation at Lambert-St. Louis Field.

Florida Glider Club is Organized

THE Fernandina, Florida, Glider Club started active operation early this month upon receipt of a primary training glider from a Michigan manufacturing plant. The Fernandina club was organized recently and is affiliated with the National Glider Association.

The glider was tested at the factory before shipping to the local club, and has been awarded Department of Commrce identification number 838N.

This is said to be thee first approved type of motorless airplane to be set up in the Southeast.

Unusual Glider Flights Planned at Miami

PLANS for the first aerial glider express train attempted in America, a demonstration that will presage the day when fast through air liners will tow passenger carrying gliders at high speeds, detaching them over cities to glide to earth, have been announced by Arthur Curtiss, President of the Aero Club of Miami.

Dr. Wolfgang Klemperer, of Germany, one of the foremost authorities on gliding, who holds a gliding endurance record of 14 hours, is in this country and has written aviation authorities at Miami that he will come here with one of the finest gliders in the country for such a demonstration, if arrangements can be made. Professor R. E. Franklin, of the University of Michigan, has stated to the Miami committee that Wallace Franklin, his brother, will be a part of the glider express train crew. Mr. Franklin has had 42 gliding hours and holds the record for gliding endurance in the United States.

Dr. Klemperer plans to be towed by airplane from Akron, Ohio to Miami, while Mr. Franklin plans to be towed from Ann Arbor, Michigan. At Miami both men will attach their gliders to a single plane, take off, soar to a high altitude and glide down the Florida east coast at a 100-mile-an-hour clip. When the express train reaches Miami, one of the gliders will detach itself and come to earth while the other glider continues on. Over Coral Gables the other glider will detach itself and come down. In each case the power plane will not be required to stop or even slow down.

Such a demonstration, it was pointed out by the National Glider Association of Detroit, will presage the time when fast through aerial express trains will find it imperative to detach passenger carrying gliders over designated cities. To stop, taxi around and take off again, will require too much time.

This demonstration was tentatively scheduled to take place during the Miami All American Air Races, January 13, 14 and 15.

The Davis Aircraft Corporation, of Richmond, Indiana, has completed contract arrangements with Truxal and Hightower of Kansas City, Mo., for the distribution of Davis Monoplanes in that territory.

Latest Developments in AIRPLANES AND ACCESSORIES

The New Monosport Enclosed Plane

THE Monosport is the latest addition to the line of planes manufactured by the Mono Aircraft Corporation. This is the fourth model to be brought out by the company.

The Monosport is a two-place, cabin type, high wing monoplane having deluxe appointments and performance comparable to pursuit planes. It serves to fill a definite demand for a plane having exceptional maneuverability and speed plus the comforts and advantages of an enclosed plane.

The Monosport, latest addition to the line of Mono Aircraft Corpn.

Equipped with Edo pontoons it may be used for water flying.

Dual rudder pedals are standard equipment and addition of an extension to the control stick transforms the Monosport into a dual instruction ship. Bendix wheel brakes are controlled by heel pedals on the left side of the rudder.

Genuine leather, in a color harmonizing with outside finish of the plane, is used in the cabin interior and lends a distinctive touch to the plane.

Each Monosport is equipped with steel propeller and a complete set of instruments including navigation lights, Pioneer compass and speed indicator and Consolidated tachometer, altimeter, oil pressure and temperature gauge. Preheating of oil is accomplished by use of the Thermo Pete installed in the oil tank of all planes. A large luggage department is located directly behind the seat and is made accessible by pulling the back of the seat forward. Doors are provided on either side of the cabin. Windows and windshield have been arranged to afford perfect visibility for pilot and passenger.

Specifications

Type: Two-place, enclosed, land monoplane

Power Plant: Kinner K-5, 100 h. p., or Warner-Scarab 110 h. p.

Dimensions: Span overall, 32 ft., 3 in. Length overall, 22 ft. 2 in. Height 7 ft. 1 in. Chord, 5 ft.

Construction: Wing of wood covered with Flightex. Spruce spars. Ribs of spruce and basswood. Fuselage and tail assemblies of welded seamless steel tubing.

Area: Wing area including ailerons, 132.2 sq. ft. Rudder area, 7.15 sq. ft. Vertical fin area, 3.65 sq. ft. Elevator area, 9.4 sq. ft. Stabilizer area, 12 sq. ft.

Weight: Empty, 1053 lbs. Weight fully loaded, 1650 lbs. Useful load, 597 lbs.

Performance: High speed, 125 m.p.h. Cruising speed, 107 m.p.h. Cruising range, 550 miles. Ceiling, 20,000 feet. Climb first minute, 1,000 ft. Landing speed, 42 m.p.h.

"Imperial" Added to Bird Wing Line

THE "Imperial" is the latest addition to the line of planes produced by the Bird Wing Commercial Aircraft Corporation, of St. Joseph, Missouri. It has been tested and granted an approved type certificate by the Aeronautics Branch of the Department of Commerce, company officials state.

The "Imperial" is powered with Wright J-6 motor. Low landing speed and quick takeoff make it adaptable to small fields, and unusual stability combined with ease of maneuverability, make it an excellent ship for the sportsman pilot, its manufacturer states.

Specifications of the "Imperial" are as follows:

Type: 3-place, open, land, biplane.

Power plant: Wright J-6, 5 or 7-cylinder, or Hisso E., Continental, Challenger or Comet.

Areas: Wing Area: 303.5 sq. ft.

Dimensions: Span, 31 ft. 4 in. Length, 24 ft. 2 inch. Height 8 ft. 7 in.

Performance: High Speed (with Wright J-6) 125 m.p.h. Cruising speed, 105 m.p.h. Landing speed, 30 m.p.h. in calm. Climb, full load, 10,000 ft. in 27 min. Service ceiling, 15,000 ft. Absolute 22,000 ft.

Construction: Fuselage of welded round steel tubing. Empennage round welded steel tubing throughout. Wings of wood and steel.

Weight: Empty 1440 lbs., fully loaded 2,270 lbs.

The Bird Wing corporation's newest product, the "Imperial"

New Construction System for Seaplane Runways

AN IMPROVED system of constructing seaplane runways or ramps has been devised by O. A. Sandquist, of Sandquist & Snow, Miami contractors, and application has been made on the patent on the system. The first occasion for employing the perfected system will be in the construction of a seaplane ramp at the west end of the hangar at the municipal seaplane base occupied by the Viking Flying Boat Company, for which Sandquist and Snow have the contract. This work will be started as soon as a permit for construction of the ramp is received from the United States government engineer.

The principal advantage of this runway system will be the elimination of slow and expensive underwater work so that such runways may be built quickly, substantially and within a reasonable cost. The runway is also the removable type so that it can be moved easily to another location.

Another advantage of this type will be in military use. For instance the runways can be shipped to isolated naval air stations knocked down, and can be easily erected for quick use. Mr. Sandquist was officer in charge of construction for the Navy at the Key West Naval Air Station, at Dinner Key Naval Air Station, and at the dirigible field, Akron, Ohio. He now holds a Lieutenant Commander's reserve commission in the civil engineering corps.

The new system contemplates the maximum use of precast and rebuilt units so as to minimize the expensive underwater work and also to cut down the time required for installation.

The main skeleton frame can be built of wood on land and then launched and floated into position. Previous to this, the supporting piles must be driven with timber caps, placed and ready for use. The precast, concrete slabs of sufficient number to overcome bouyancy of the frame, then are slid down the runway frame provided for this purpose. Their weight sinks the frame to the required position and it is anchored down with shackles. The shackles are tightened with turn buckles and held in place with wedges. If further anchorage of the shackle collar is needed, a heavy spike can be driven directly over the collar into the pile.

The runway frame now is anchored in position and flooring is placed by launching or sliding built-up wood laminating sections into a slot

A. O. Sandquist

on the frame until the flooring under water is completed. The runway part that is out of the water can be continued with the most economical, ordinary practice considering the loading to be carried.

Each runway adaptation first must take into consideration the type of seaplanes to be used and then designed so as to carry the loads properly.

Two additional approved type certificates for the manufacture of aircraft under sanction of the Department of Commerce, Aeronautics Branch, have been received from the department by the American Eagle Aircraft Corporation, E. E. Porterfield, Jr., president, announces. Approved type certificate No. 282 covers the American Eagle Phaeton powered with the Wright Whirlwind Five, and No. 283 has been issued for the Phaeton powered with the Wright Whirlwind J-5 engine.

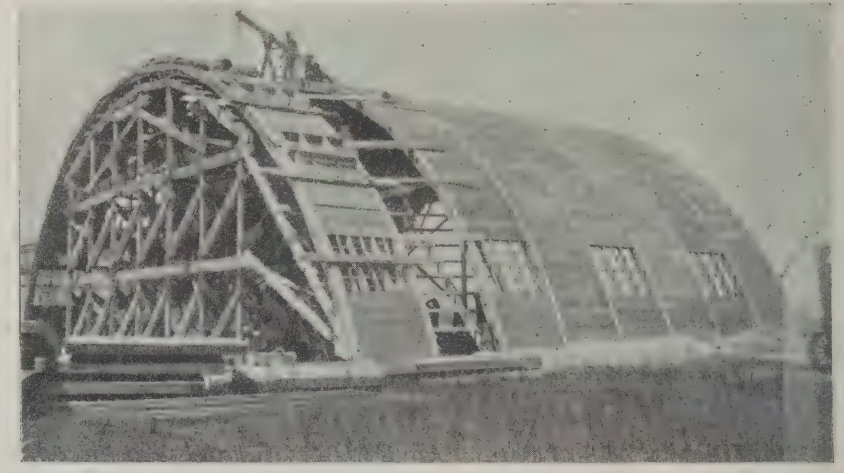
New Hangar Designed by Notrus Corpn.

IN WIND and snow tests held during the erection of the new Notrus hangar at the plant of the Great Lakes Aircraft Corporation, Cleveland, Ohio, the hangar withstood a snow pressure of 30 pounds to the square foot, and a wind pressure equivalent to a 90-mile gale, returning to within half inch of its original position at the conclusion of the tests, it is stated.

The tests were held in accordance with requests by the engineering department of Cleveland. Wilbur Watson and Company, designers of the Goodyear hangar at Cleveland, conducted the tests.

The Notrus hangar, a product of the Notrus Hangar Corporation of Houston, Texas, is an arched shaped structure springing from the ground. The distance across the arch is 76 feet and the distance across the roof from point of contact with the ground is 90 feet. The arched shaped entrance is 27 feet high.

Wind load tests were conducted by attaching 5-8 inch steel cables to 6 inch by 6 inch timbers laid horizontally across the roof of the test arch at three equal points on one side of the structure. The steel cables ran horizontally through sheaves attached to the scaffold and then vertically toward the ground and were attached to 8 feet by 8 feet platforms suspended above the ground on which were piled sacks of sand exerting a 30 lb. wind load per sq. ft.



The Notrus hangar at the Great Lakes Aircraft plant in Cleveland

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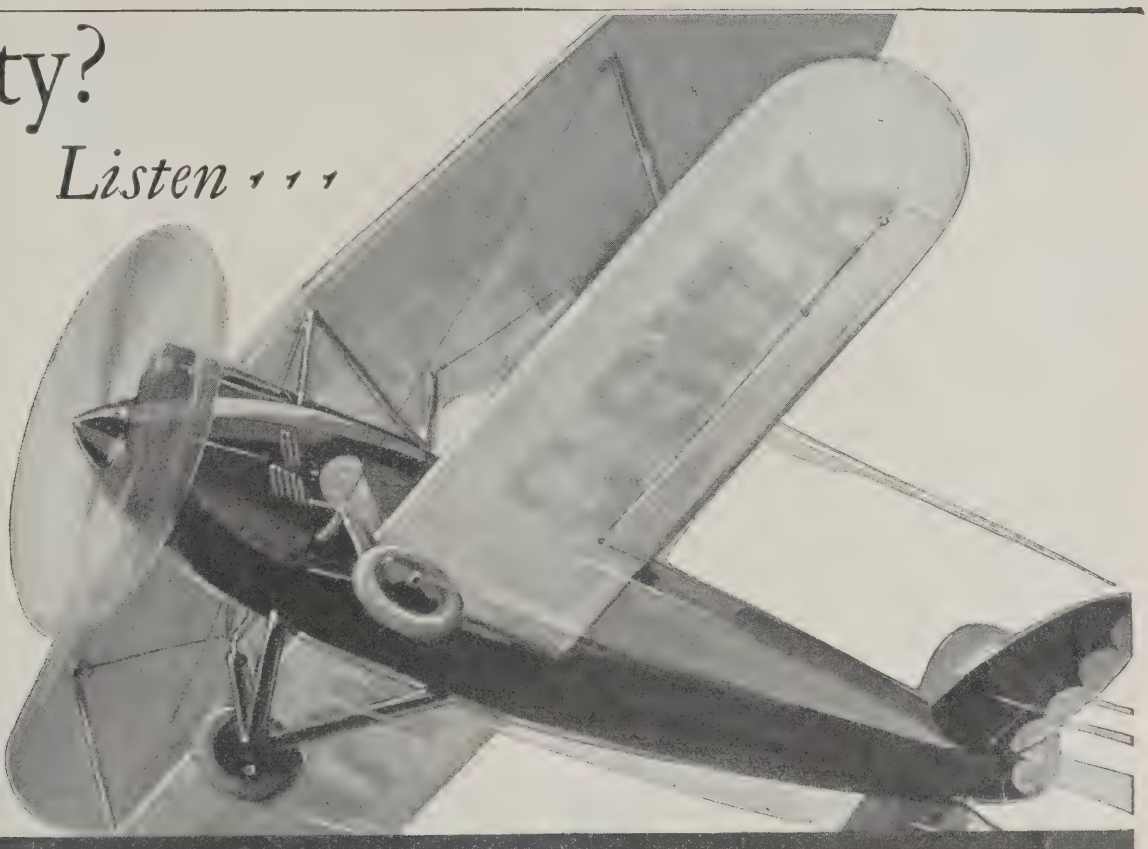
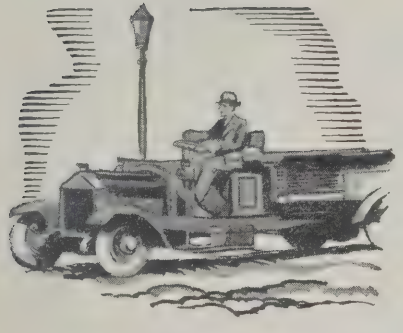
The Curtis Robertson Airplane Company of St. Louis has started production on a 4-place Robin powered with Challenger engine. The new Robin has a slightly larger fuselage than the previous model. The tail skid is replaced by a wheel.

Pretty?

Listen . . .



. . . nothing prettier ever flew!



LEARN how to drive with a truck? How absurd! What YOU want is today's smartest roadster—full of pep and power and fight and go! Something that jumps when you touch the accelerator—something dashing and spirited—alive.

WHEN you climb into a Great Lakes Trainer for your first trip aloft, you know you're in an *airplane!* Give 'er the gun; roar away to a zooming take-off! Touch the joystick for a bank—there's almost human coordination between rudder and ailerons. Throttle 'er down for a slow, smooth, three-point landing. Boy!—that's *Life* for you!

Learn your flying where they teach you in a Great Lakes Trainer and you'll never have to apologize for your school or your ship. Even if you start in something else, you owe it to yourself to *complete* your course in a Great Lakes ship. The Trainer is just about the neatest trick you ever cocked an eye over. Graceful. Fast. Rugged. And good looking as the girl in that blue roadster yesterday.

Motor? An American Cirrus that roars an indication of its mighty power every time you open the throttle. Safe?—well, it's engineered to the strictest specifications—built by men who are fliers and know flying.

As a matter of fact, if you really want to *learn* about the air and the thrill of flying, the Great Lakes Trainer will teach you. Write for our new illustrated book, "Learning to Fly." It's free!

GREAT LAKES AIRCRAFT CORPORATION CLEVELAND

Manufactured under U. S. Department of Commerce Approved Type Certificate Number 228

New Reversible Propeller Tried Out in Calif.

A PUBLIC flight, demonstration of a reversible pitch propeller, the invention of A. E. McLeod, was made recently at the Aero Corporation of California field at Los Angeles, in the presence of over 500 engineers, designers, inventors, and members of the press. The demonstration not only included that of the reversible pitch propeller but also the practicability of a new direct drive self-starter which weighs only 25 3-4 pounds.

With the propeller and starter installed on the Super Universal Fokker powered with a Pratt & Whitney Wasp engine, the demonstration was conducted with Colonel Arthur C. Goebel at the controls. The demonstrations consisted of first starting the 425 h. p. Wasp engine with the new self starter by merely pressing a button on the dash board. This starter was invented by V. C. Hodges and follows closely the design and operation of that on the automobile.

With the motor started, the plane was taxied forward in the usual manner then taxied backward over its own tracks, which, it is stated, was the first time in history an airplane has been able to back up under its own power. This was done by merely reversing the propeller pitch.

Reversing the pitch of the propeller blades, was accomplished by a slight movement of the special control in the pilot's cockpit. Several such demonstrations on the ground proved quite interesting to members of the aeronautical industry who were present.

Further demonstrations consisted of taking off, flying at various speeds, and landing. Through the controllability of the propeller pitch the take off time was cut to six and one-half seconds as compared to twelve seconds with the conventional type propeller, it was reported, and a climb to 5000 feet was accomplished in three and one-half minutes, which requires six minutes when using the conventional propeller under the same circumstances.

Quite interesting results were witnessed in a number of landing demonstrations. Through reversing the propeller pitch completely upon landing. the plane was able to stop within a distance ranging from 40 to 80 feet, it was said, thus proving the ability to dispense with the much needed landing area required at the present time. This is a considerable achievement in landing when considering that a similar ship equipped with a conventional propeller requires approximately 500 feet landing area.

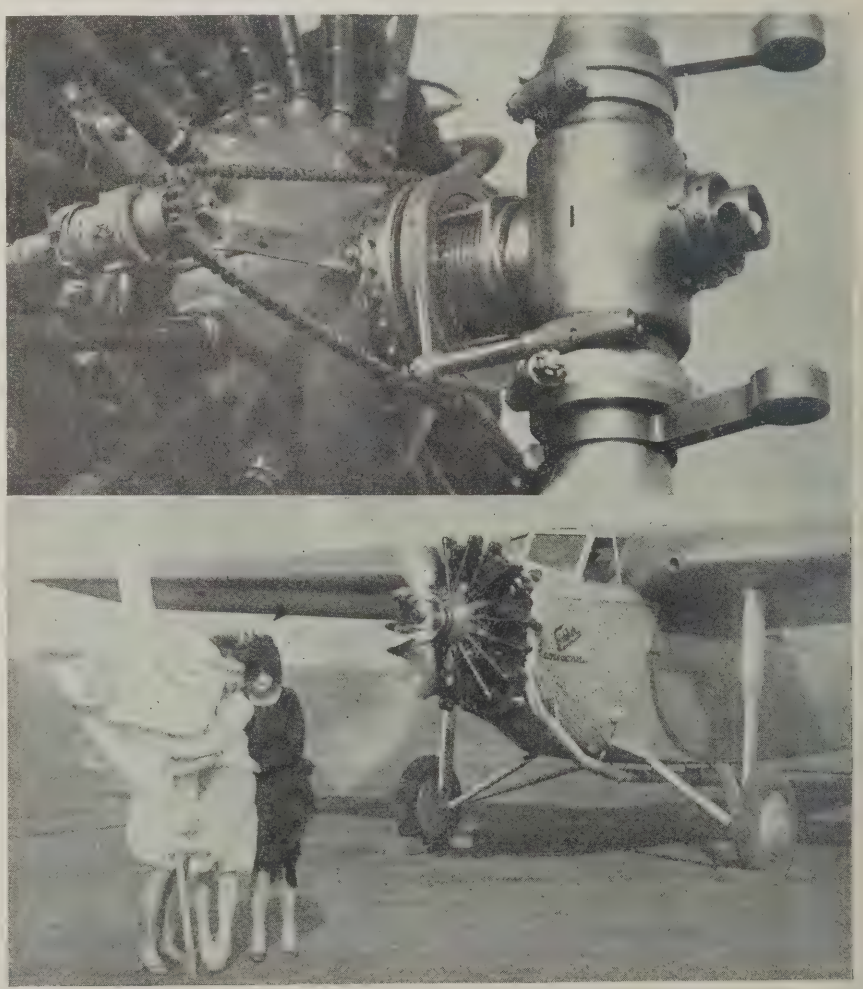
According to Mr. McLeod, the variable pitch propeller will not only shorten the take off time, increase the rate of climb, and serve as brakes on the ground but will insure 30% more absolute ceiling and save the motor at cruising speed. At 1200 to 1400 r.p.m. this plane performed equal to that equipped with a conventional propeller at 1700 to 1800 r.p.m., McLeod states.

The forming of a new closed corporation to start manufacturing this starter and variable pitch propeller is now in progress and manufacturing of these products in Southern California will begin within the next few months, it is stated. Members of the new corporation include C. M. Fuller, president, and A. K. McLeod, vice president and general manager.

Adams Mail Pick-Up on Standard Planes

The first New Standard mail plane equipped with the Adams Mail Pick-up, was flown from Teterboro Airport in December, to be put into service by Clifford Ball, Inc., operating the Cleveland-Pittsburgh line. Harry Sievers accepted delivery of the new plane.

Following tests with the mail pick-up device on other planes, Clifford Ball ordered the special installation on his fifth New Standard mail plane. He expressed the belief that the New Standard mail plane will prove especially suitable for the work because of the exceedingly low flying and low stalling speed. Some difficulty was encountered with speedier ships, according to Mr. Sievers, as they had a tendency to "fall off" when throttled down to a slow enough speed to hook onto the mail sacks.



The top view shows a close-up of the mechanism operating the variable pitch propeller, installed on a Pratt and Whitney Wasp motor on a Fokker Super Universal plane; the lower picture shows graphically the effect of the wind stream with the propeller in full reverse pitch, with the plane securely blocked. In demonstrations, the plane was taxied both forward and backward across the field

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Hamilton Designs Engine Service Stand

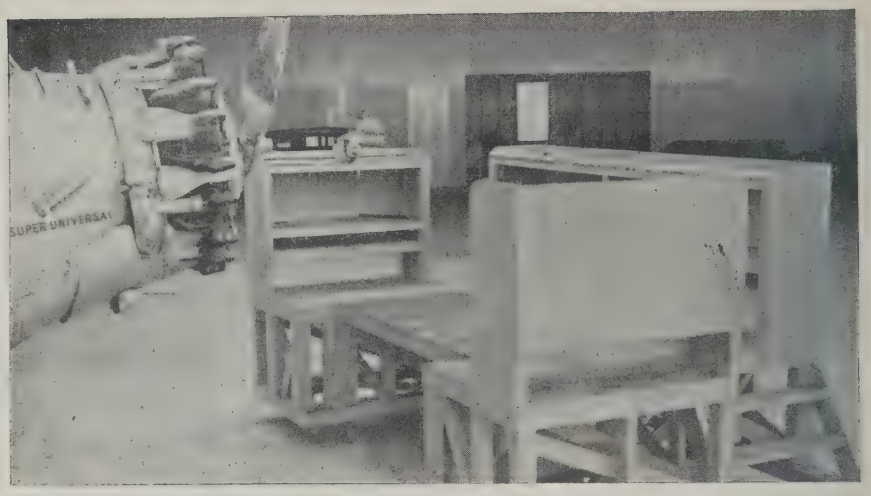
WALTER A. HAMILTON, vice-president in charge of mechanical operations at the Aero Corporation of California, has recently devised and built an engine service stand for single motored and trimotored planes.

The new Hamilton service stand is a substantial and well built platform from which mechanics can conveniently work on engines and engine installations without the loss of time.

The Hamilton service stand insures a good substantial footing for men working on engines and is equipped with shelves for tools as well as vices and other readily required equipment, according to Mr. Hamilton. The stand is built on casters and can be moved around through the shop.

A number of these stands have been built and are being used at the Aero Corporation of California authorized Pratt & Whitney Wasp and Hornet engine service shops at Los Angeles and El Paso.

Hamilton has found that since using these stands the output of his staff of sixty government licensed airplane and engine mechanics has been greatly increased, he states.



Engine service stand designed by Walter Hamilton of California

Air Associates Announce "Sikorsky Dolly"

A one-man "Sikorsky dolly," a patented device, has been designed specially to meet service hangar requirements by Air Associates Incorporated, and is now in production at that company's Chicago service plant.

The device is in two parts, consisting of a shoe for the Sikorsky tail skid and a lever arm with fitting and wheels which, when attached to the shoe, enable one man to handle the twin-motored amphibian without the assistance of a hangar crew hitherto necessary.

The device has been approved by the Sikorsky Aviation Corporation, who have placed an initial order with Air Associates for five dollies for plant requirements.

Houston Men Design New Type Engine

An airplane engine of only twenty-one working parts, the product of two Houston, Texas, inventors, H. F. Lyons and Victor Toce, was flight tested recently at Houston.

The engine, known as the Hurricane, approaches the ultimate in simplicity of design. It weighs 225 pounds, develops 150 horsepower and requires an average of seven gallons of gasoline per hour, its designers state.

The engine is the product of eight years of study and work on the part of its inventors. It operates on the two-cycle principle and has neither valves, rocker arms nor carburetor. It is an eight-cylinder radial type.

Its inventors say of the Hurricane that on account of its light weight, and few working parts and low fuel consumption, it will become a popular power plant for small craft. The test plane equipped with the Hurricane obtained a speed of 90 miles an hour, it is said.

New Aeronautical Books

"The Navigation of Aircraft," by Lieutenant Logan C. Ramsey, U. S. N., has recently been released by the Ronald Press Company of New York. The book contains 234 pages, with 50 illustrations. Price $4.50. The author, Lieutenant Logan C. Ramsey, is a naval aviator and an acknowledged authority on aerial navigation.

The book points out that aerial navigation is a vital factor in efficient airplane operation, the methods only differing in flights of various length, under 200 miles, 200 to 800 miles, and 800 to 3,000 miles. It teaches that dead reckoning is the most important branch of aerial navigation and the most deserving of attention from all flyers and navigators. It thus corroborates the experience of aerial navigators and makes available a book that navigator, pilot, and student can study with a view to putting its teachings into practical use in daily flights.

"The Navigation of Aircraft" should become widely and favorably known among the men engaged in airplane operation.

To those who ask "What jobs are there in aviation?" Walter Hinton's new Book, "Opportunities in Aviation", published by W. W. Norton and Company, New York, will give the layman an idea of the scope of the industry.

The pioneer aviator discusses the various openings in different branches of the industry for both men and women.

Mr. Hinton is qualified to speak authoritatively on the subject, having been connected with aviation since the war, and pilot on several historical flights. He was pilot on the NC-4 on its trans-Atlantic flight in 1919, on the Sampaio Correia II on the historical flight from North to South America in 1922, and for eight months with the Dr. A. H. Rice Scientific Exploration in the Amazon regions in 1924 and 1925.

The Aircraft Handbook, Published by the McGraw-Hill Book Company of New York, is an up-to-date treatise on the care and construction of modern aircraft, motors and instruments.

The authors, Fred H. Clovin and Henry F. Colvin, have had wide experience in the aviation field. The former is editor of the American Machinist and author of many articles on mechanics.

The information contained in the volume will be of value to those interested in aeronautics, whether they be plane owners, students, plane builders, or those who repair planes.

A dictionary of nomenclature for aeronautics, by the National Advisory Committee for Aeronautics, is included.

A new book that will freshen the memories of pilots who fought in the war, and give modern fliers an idea of what aerial fighting was like, is Clayton Knight's **"Pilot's Luck"** published by the David Mackay Company of Philadelphia.

The book contains 23 page paintings of wartime craft of both Allies and Germany, accompanied by excerpts from the stories of Elliot White Springs, Roy Brown, Norman S. Hall and Floyd Gibbons, all of whom were actively engaged in aerial warfare.

Those air-minded will find it a pleasing addition to their aeronautical libraries.

Aviation is headed Southward!

Air lines for sportsmen and vacationists—to Pinehurst, Asheville, Hot Springs and the Florida Riviera—a pleasant trip of but a few fast hours for the business executive travelling to Charlotte, Atlanta, Jacksonville or New Orleans—organized air travel in the South is waiting only for organized service facilities.

To establish automotive accessory dealers with an eye for the future of aviation, we offer an opportunity to represent this nationally advertised line of aircraft propellers—preferred by the country's leading pilots.

Send to-day for descriptive literature and details of our dealer offer.

Paragon Propellers

THE AMERICAN PROPELLER COMPANY
242 Grindall Street
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THE GREAT DO-X COMING to AMERICA and TITANINE as usual COMES WITH IT

The manufacturers of the great DO-X as well as others who are interested in the wearing qualities of their fabric surfaces as above appearance specify Titanine, for they have discovered that Titanine schemes are designed to eliminate their fabric troubles. There is a scheme for every condition and climate.

IF the aircraft manufacturers will accept the scheme as designed for their craft by Titanine, Inc., and **IF** they will apply it as per instructions given, Titanine, Inc. will guarantee their surfaces.

STANDARD AIRPLANE FINISHES SINCE 1913 TITANINE

This advertisement featuring the DO-X is No. 1 of a series presenting airplanes surfaced with Titanine finishes.

TITANINE, INC.
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STANDARD AIRPLANE FINISHES SINCE 1913

U. S. DEP'T OF COMMERCE APPROVED TRANSPORT GROUND & FLYING SCHOOL

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When you turn your airport or airway lighting installation job over to Harrison-Wright you can do so with the assurance that the job will come up to every expectation. This company has installed nearly 3,000 miles of lighting equipment throughout North, Middle West and South.

From Estimates to Complete Job!

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AIRPLANES—FLYING BOATS—MOTORS—SUPPLIES

New 12 Cyl. 400 h. p. Liberty motors	$850.00
Very moderately used Liberty Motors	550.00
Used OXX6 100 h. p. 8 cyl. Curtiss motor—fair condition	385.00
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Flightex Cotton Fabric—50c a yard	
Nitrate Wing Dope—5 gal.	7.50

2" Wing Taple 4½c a yard or 100 yds. $4.00
Chamois lined chocolate brown leather helmet $4.50
NAK resistal non-shatterable goggles $5.00 or oval type $2.50
White Flying Suits $8.50

Everything for aircraft, including OX5 parts. Send for catalogue.

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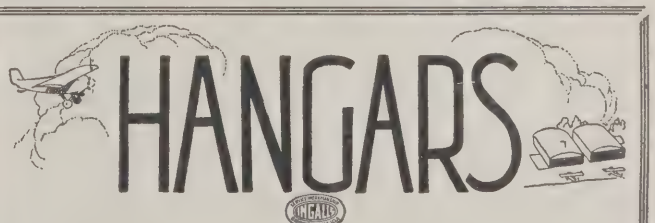

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Aids for Testing Pilots

(*Continued from page* 27)

places his face in the hood, which is not only dark at the moment but is light-proof. The interior of the mask or hood remaining dark, the student is oblivious to environment insofar as vision is concerned. The chair is whirled around in first one and then the other direction and the test subject is questioned as to the direction he is turning. His answer is invariably correct, if he is a normal person. Upon slowing down and stopping the chair, however, the pilot will state that he is turning in the opposite direction. Then to prove that the chair is motionless, the hood is lighted up and the bank-and-turn indicator and other instruments brought into review.

"By illuminating the interior of the instrument hood," points out Captain Ocker, "the subject will observe that the bank-and-turn indicator shows he is turning in the direction opposite to what his sensations would lead him to believe. When turning with the instrument hood dark, the subject may be asked to operate the rudder bar to steer according to his sensation. Obviously, he will move the rudder bar to correct for the direction of movement his sensations produce, which is erroneous. After the instrument hood has been illuminated and the subject shown the direction he is turning, the hood is moved away from his face and the sheet of paper will indicate the extent of the movement of the rudder bar in the wrong direction."

This novel instrument—the dizzy device, if flippancy is permissible—not unlike the Ruggles Orientator, the Jones-Barney turning chair, and a more recent instrument known as the mental-reaction testing machine, is designed to simulate conditions of flight in the laboratory and on the ground. In particular, this whirling chair is intended to duplicate the experience of an airplane becoming ungovernable due to loss of speed, or when the pilot is deprived of ground or horizon visibility. It is both physiological and mental in the tests applied, and the reactions of the pilot are quickly determined—in part by ready observation and partly by written records kept of the behavior of the rudder bar as it is manipulated by the test subject.

Development of Toney Field

(*Continued from page* 28)

the Department of Commerce. It will be completed within the next few months.

It is expected that the amount spent in 1929 for improvements would approximate $75,000. The value of the buildings now on the field is estimated at approximately $62,000, with the entire airport being valued at $232,000. Additional land has been purchased adjoining the field for the development of an industrial center, to consist of schools, repair shops, and other enterprises that will become a part of every airport as the industry grows older.

The facilities of the field were given sufficient recognition as early as 1927 for it to be placed on the Ford Tour, and in 1928 the Eastern Transcontinental Air Race was routed to Toney Field where a night stop was made. Since this time many of the pilots in these two events have visited the field and have been high in their praise of the improvements made since their first visits.

Toney Field is strictly a private field. When the municipal bond election was held and defeated, a group of enthusiastic business men formed the Arkansas Airports Company and furnished the capital with which to provide this model airport. It happened that Pine Bluff had a "flying mayor." W. L. Toney, at the time the proposed bond issue was defeated, and he attacked the problem of building the port with an enthusiasm that comes only to one who has experienced the thrill of flying. Loui Garrett, another prominent Pine Bluff citizen, was anxious to see his city keep abreast of other cities in the state in airport development, and worked wholeheartedly with the group to help make Toney Field the magnificent field it is today.

The World's Largest Airport

(*Continued from page* 32)

Additional buildings, among others, called for in the layout include the post chapel, post exchange, shops, garages, storehouses, bakery, guardhouse, home of the commandant, cadet flying school and barracks, mess hall, post hospital and the school of aviation medicine, the latter now being at Brooks Field.

Particular importance has been attached to the recreational and athletic facilities by those who designed the layout. A $60,000 gymnasium will be erected, and seven large swimming pools and more than a score of tennis courts will be built. These will be supplemented by an immense athletic field.

While army officials are reluctant to hazard a guess as to the ultimate extent of the Randolph Field plant, it has been so planned that it always will be ready for expansion. Perhaps the only obstacle standing in the way along that line will be congestion of the air.

While it has been generally understood that Brooks Field and some units of March Field will be transferred to Randolph Field, it is considered problematical at the present time whether Kelly Field will be moved. This probably will not be decided until the airdrome has been completed and activities started, when, if it is found that the saturation point in air congestion has not been reached it no doubt will mean the passing of Kelly Field.

Officials, in laying out the mammoth airdrome, have looked into the future and they believe that even with the passing of a half century Randolph Field will not be obsolete. Certainly it will embody a real home for the military stationed there with its comfortable quarters, efficient equipment, attractive and home-like surroundings and modern requisites.

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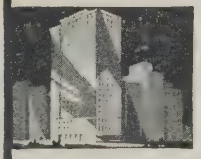

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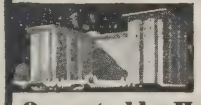

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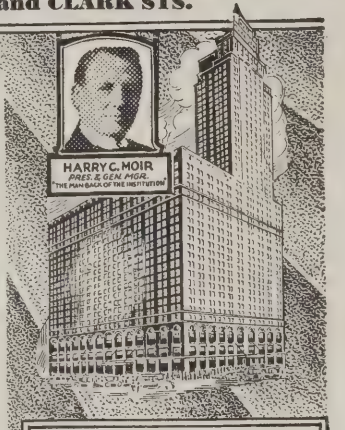

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Advertisers' Index

A

Aeronautical Chamber of Commerce of America — 59
Aero Supply Mfg. Co., Inc. — *
American Aeronautical Corp. — *
American Eagle Aircraft Corp. — *
American Propeller Co. — 61

B

Bowman & Company — *
Braley School of Flying — Inside Back Cover
Brunner-Winkle Aircraft Corp. — *

C

Carolina Metal Culvert Co., Inc. — 6
Cessna Aircraft Co. — 8
Coble Brothers — *
Consolidated Instrument Co. — *
Crouse-Hinds Company — Back Cover
Curtiss-Wright Sales Corp. — 1, 2, 3, 4 and 5

E

Eastern Aircraft Supply Co. — 63

G

Gilmore Oil Co. — Inside Front Cover
Great Lakes Aircraft Corp. — 57

H

Harrison-Wright Co. — 59
Harry Bros. Co., of La. — 6
Heiss Hotel System — 63
Henley Publishing Co., Norman W. — *
Hotel Tuller — 63

I

Ingalls Iron Works Co. — 61

L

Logan Aviation Co. — 61

M

Metal Aircraft Corp. — *
Morrison Hotel — 64

N

New Standard Aircraft Corp. — *

P

Parks Air College — *
Parks Aircraft Corp. — *

R

Russell Manufacturing Co. — *

S

Service Steel Company — 63
Southern Air Transport Co. — *
Spartan School of Aeronautics — 61
Stanavo Specification Board, Inc. — *

T

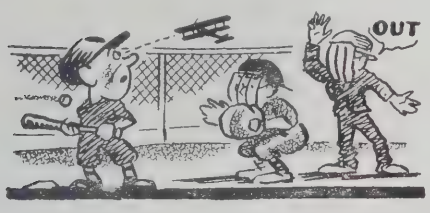
Titanine, Inc. — 61

Jennie was his Flying Teacher...

..a short story complete on this page.

"HOD" BOYLE learned flying in Peterson's pasture where, as a youngster, he had often played "push-around" with never a thought that he himself would some day outdo, in flight, the wild ducks that flew overhead on those balmy spring days. "Hod" was rated one of the best all 'round ball players among the kids, and sure future league timber. When the boys chose up sides he was first choice for pitcher, and led the batting list.

But when "Hod" reached senior baseball age he didn't prove out predictions. Organized baseball did not attract him. Not that he lost his fondness for the game, or his ability; aviation was preparing to arrive. It had reached its sub-deb stage.



"Didn't Prove Out Predictions"

Archie Dodge, back from the war, brought an airplane to the old home town. It boasted the famed ancestral line known as JN, and it was, in those days, "some" airplane. Young Dodge calculated to be a pioneer in the development of commercial flight. Air commerce at that time consisted chiefly of exhibition and an occasional high-priced passenger hop. But it was a coming thing. Dodge could see that. He had little difficulty converting Boyle to similar beliefs, for "Hod" was red-haired and red-blooded; he had the natural stuff for a successful pilot. So he became a student of his old playmate, and he made steady progress.

Aviation was marking time. But pilot Boyle was able to struggle through the lean years by featuring daredeviltry; this was marketable; it was also risky. Remember, many of the things now known about aviation were then but mystery, if, indeed, they had even come within man's experience at all.

Along came Chamberlin with a plan to fly across the Atlantic. The public's attention

"Aviation Was Arriving"

was called to aviation, then suddenly swayed into unstinted enthusiasm as Lindbergh hopped across the nation and on to Paris. Chamberlin's delayed flight seconded the notion that aviation might, after all, be practical. Then Byrd added to his scientific demonstrations that the air was a useful, governable transportation medium. Aviation was arriving. Young men were inspired. Factories sprang up like mushrooms, and flying schools spread like maggots. It was a great epoch for the cow-pasture pilots, barnstorming and sprouting wings for feverish fledglings.

So the new day is at hand. Out of temporary delirium has come organized, established commercial aviation. It is here to stay; and with readjustment correcting the errors of haste, the aeronautical industry is combing the world for men who know what it is all about.

There are over 20,000 miles of established airways in the United States. Planes are flying commercially to all settled parts of the earth and exploring the sparsely settled regions. Air commerce needs thoroughly trained men and safe pilots.

Yet somehow "Hod" Boyle has been lost in the shuffle. Was he not one of the earliest to learn flying? Was he not considered an expert pilot? Had he not demonstrated his ability?

Yes, all of this, but employers are now getting down to serious business and they have almost resorted to the use of precision instruments in the selection of pilots and mechanics. They refer to training records, and they must know that the government tests have been passed.

"They Refer to Training Records"

That is why "Hod" Boyle and hundreds of others with incomplete training are being left out of the picture, many of them to give up aviation as a business, others scrambling into the few reliable schools that have shown, in their development, a vision of future requirements. "Jenny trained" pilots, and even many war trained pilots, have found themselves insufficiently equipped with the fundamental knowledge and accurate instruction which today qualifies men for the real positions in aviation.

With many pilots unsituated, the need for "certified" pilots is nevertheless critical. Every man of ability and a record of real training has a place waiting anxiously for him. The Braley School of Flying is one of the few well-established, systematic training schools to which operators can look with assurance for the kind of men they need. They are seeking Braley graduates *now*.

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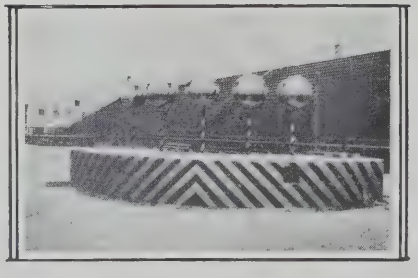

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The KEYNOTE *of* 1930

AVIATION is just emerging from a period of disorganized growth—a period of amazing progress despite the almost total absence of definite sales policies and organized market development.

The combination of over-expanded production facilities and under-developed sales outlets has hampered some ambitious promotion plans. Yet, the future of the industry was never more definitely assured than at a time when the leaders of the industry recognize the problem facing them, and are united in their determination to develop an aggressive sales program.

The keynote of 1930 is merchandising. The most important task facing the industry this year will be the formulating of definite sales plans and policies, the development of distributor and dealer outlets, and the building of efficient sales organizations. To this end SOUTHERN AVIATION pledges its every effort in assisting the industry to chart the paths of

MARKET DEVELOPMENT

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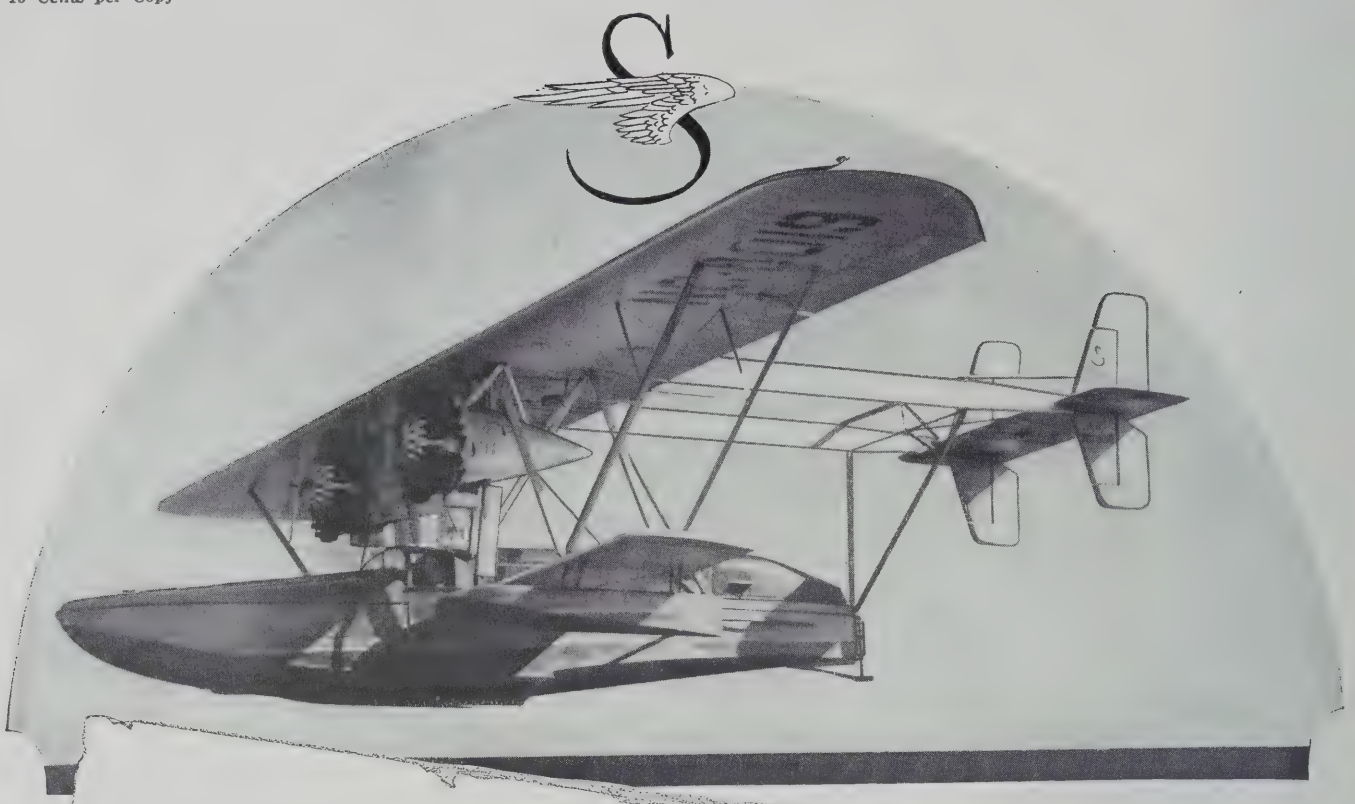

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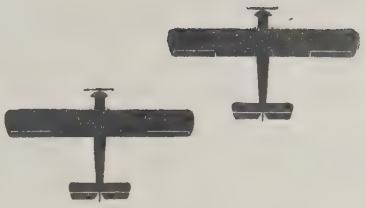

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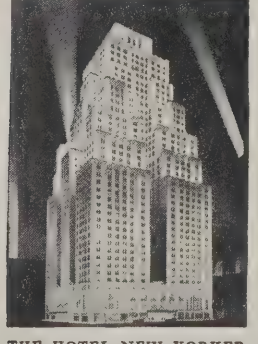

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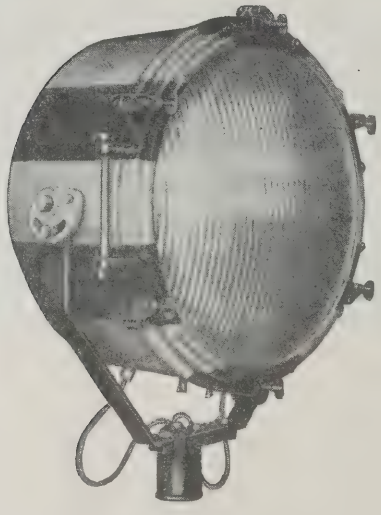

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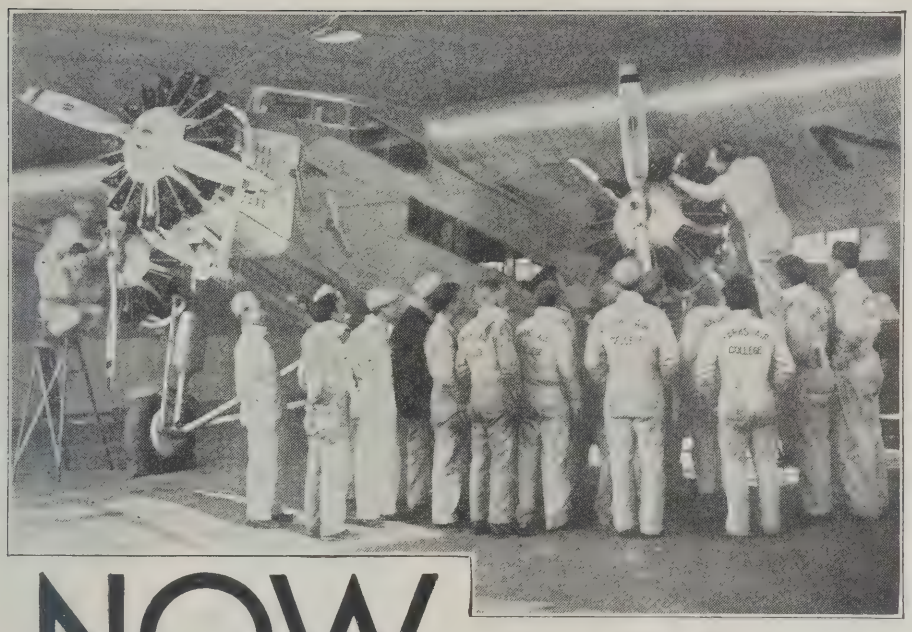

Parks instructor explaining Wasp engine to student group. All Parks airplane and engine mechanics students are given practical instruction on this big tri-motored Ford plane

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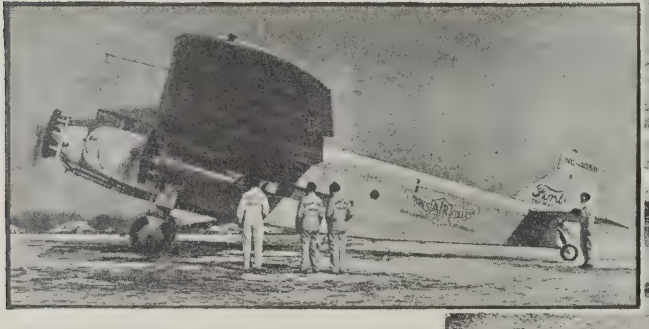
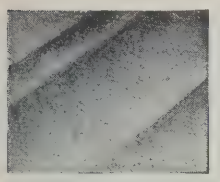
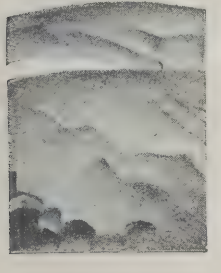


Group of Parks students inspecting the new tri-motored Ford. Each of these men will be given a thorough course of instruction, including five hours in absolute charge of this monster plane.

Parks student fueling new Ryan Brougham—a sister ship to Lindbergh's "Spirit of St. Louis"—which has recently been added to Parks equipment for student instruction.



been made *even better!*



GIANT tri-motored Ford monoplane, Wasp-powered, added to Parks equipment.

Parks Air College has taken another tremendous step forward.

To its mighty fleet of more than thirty training planes America's largest civilian flying school has now added a ***giant, all-metal Ford monoplane,*** powered by three 425-horsepower Wasp engines—an exact duplicate of the air leviathans in operation on the largest American passenger lines.

Every Parks transport student will receive thorough instruction in the handling of the new Ford—eight hours at its controls, including five hours ***in absolute charge*** of the huge plane.

The addition of this great new ship is one more reason why you should take your training at Parks. ***No other aviation school has been so progressive*** in furnishing its students with the very finest equipment money can buy.

The Parks training fleet of planes, for both day and night training, includes open cockpit ships of several types and of varying power, cabin planes of latest design, and big transport planes. In addition to the new Ford monoplane, we have just bought a six-passenger Ryan brougham, powered with a 300 h. p. Wright Whirlwind motor.

Every Parks flying school instructor holds a U. S. Government license, and is a man of high skill and thorough experience. They are all expert in their various fields. Some of them specialize in flying, others are ground school instructors doing nothing but classroom and lecture work, still others are practical shop men—and so on.

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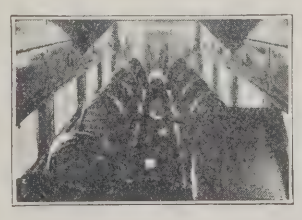
No wonder that Parks Air College was one of the very first schools to be fully approved by the U. S. Dept. of Commerce! Small wonder that Parks graduates are grabbed up quickly by aviation executives to fill important jobs at big salaries!



Interior view of our new Ford monoplane.

You can't afford any training but the best. And you can get the best training ***only at Parks.*** Your future is in the balance. Don't gamble with it. There's a big job for you in aviation. Let Parks fit you for it. Take the first step ***today.*** Send the coupon for catalog.

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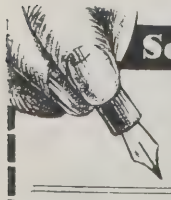
NO ONE is better qualified to teach you the tricks of safe and successful flying than Major Byron Q. Jones: He is famous as the safest trainer of pilots in any army—he is known as the first American who deliberately put his ship into a spin to see how to recover. In this famous book he tells you about all kinds of manoeuvers, from the simplest to most difficult; take off, climb, glide, landing, climbing turns, Immelmanns, Chandelles, figures of eight, how to avoid stalls and spins —how by mastering a few simple principles, you can get out of them when necessary. He has crammed into the chapters of "Practical Flying" a wealth of useful flying facts that you cannot get anywhere else.

Thousands are learning to fly with this famous book

To that question you've been asking—"Can I learn to fly quickly and well?"—he answers, "Yes! and I'll show you how." He discusses your native aptitudes for flying, the qualities you must have, the training you should take. He tells you how to judge speed and distance—how to tell whether you have a margin of safety or not. He explains the use of flying instruments and engine instruments—perhaps you did not know, for example, that with motor wide open on the ground your tachometer will show from 8 to 10% less than it will in the air—it does; and Jones tells you how to interpret the readings of your other instruments too. In simple, straightforward question and answer style he shows you the safest and best way to handle your ship in all kinds of flight—through all sorts of manoeuvers—under all kinds of weather conditions. While this book is designed to give the student pilot—and those who intend to take flying—practical advice; old-timers — men who have been flying for ten and fifteen years—use it to brush up on the fine points of handling a ship, for they find that it is neither simple nor advanced—but just **complete, and practical.** You, too will find this book a very valuable aid to flying. It is **useful** every day of the year. Let us send you a copy at once. You may examine it for five days at our expense, and return it, if you do not find it all we say it is and more.



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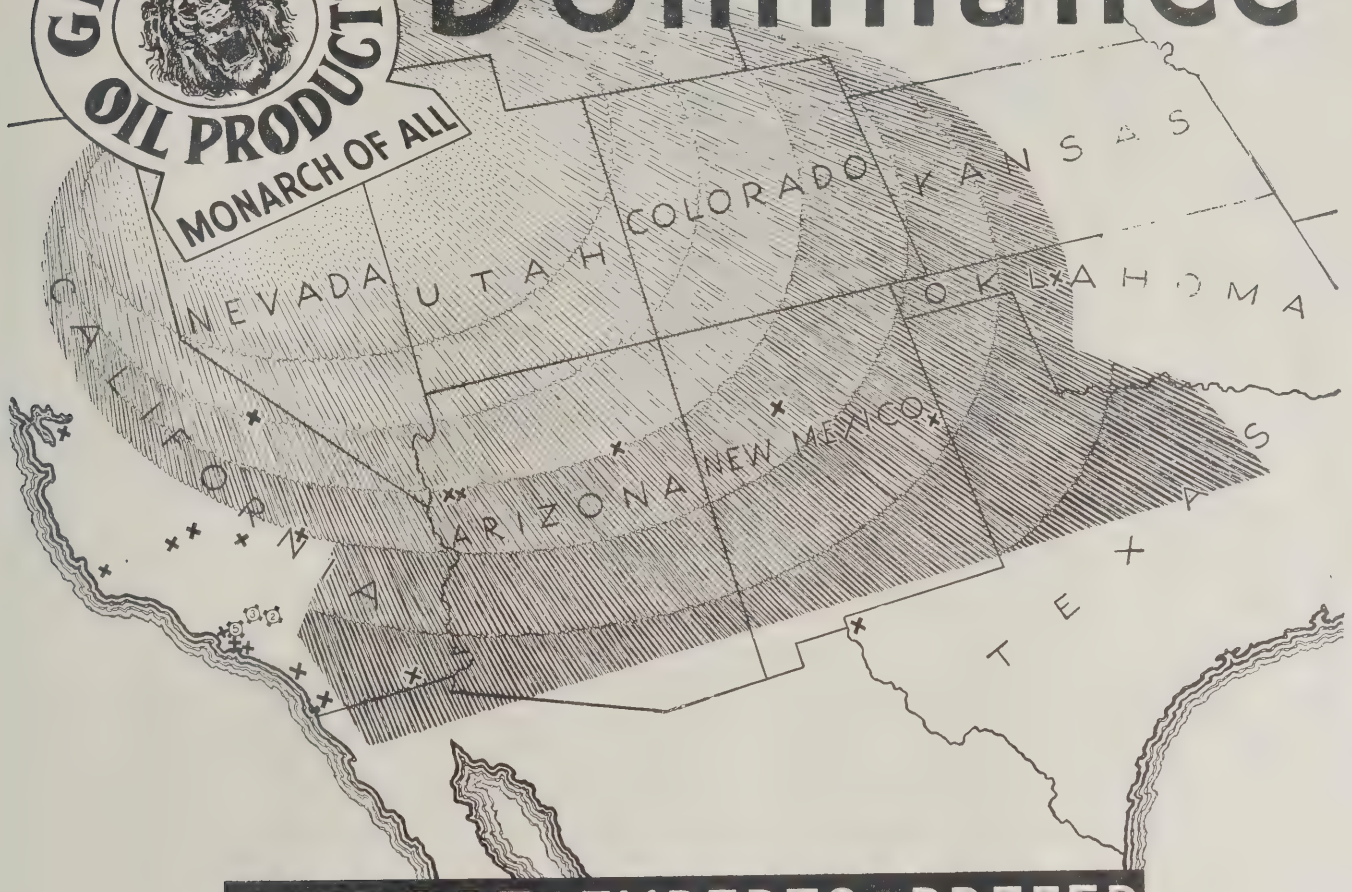

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For 1930 American Eagle again strides forward with "something new". Every whim of engineer, production manager, pilot and salesman has been built into the new American Eagles.

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AIRCRAFT CORPORATION

FAIRFAX AIRPORT KANSAS CITY, KANS.

February 15, 1930

SOUTHERN AVIATION

Vol. 1, No. 6

Published monthly in the interests of aviation and all aeronautical activities in the southern states

T. W. McALLISTER, *Editorial Director.*
B. H. VINCENT, NAT M. JOHNSON AND S. R. McGILLIS, *Editorial Staff*

Contents

Problems of Aviation 11
Selling Air Transportation 12
Large Crowds Witness Miami Air Meet 16
Louisville Plant of Curtiss Flying Service 20
Cashing In as a Plane Distributor 24
The International Exposition 29
The Problems of Training Airplane Salesmen 31
An Analysis of Our Sales Problems 33
Methods of Building Airplane Sales 34
Government Aids in Airport Development 35
News of Southern Airports and Airways 37
Aeronautical Personalities 44
General News of the Aeronautical Industry 49
New Airplanes and Accessories 58

THE International Aircraft Exposition at St. Louis, starting on February 15, is expected to mark the beginning of a new era in aviation—an era of systematic and aggressive business development. Much of the material in this issue is in keeping with this trend. Especially significant are the articles telling of the methods used by a leading air transport system to sell its services, the description of how a well-known southern airplane distributor has cashed in on his opportunities, and the several practical discussions on training airplane salesmen and developing the aircraft market.

* * *

OUR next issue will contain further articles relating to airplane sales and the development of distributor and dealer outlets, in addition to summarizing the discussions along this line at the St. Louis exposition. Another outstanding feature of the issue will be a profusely illustrated article telling of the development and operation of the Pan-American Airways system and its methods of developing and handling traffic. There will be another airplane service article and other noteworthy features.

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In this important, *untouched* market, the 3-place Savoia-Marchetti Amphibian presents definite possibilities of profit for dealers. If you have desirable prospect contacts, we would like to discuss our entire plan with you in detail—at the St. Louis Exposition, our office or by mail.

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SEE IT AT ST. LOUIS at the International Aircraft Exposition. Arrange for a demonstration while there.

SOUTHERN AVIATION

Volume 1 February 15, 1930 Number 6

PROBLEMS *of* AVIATION

For Which the Solutions Are in Sight

THERE probably are few readers of this publication who are not aware of the fact that aviation has been passing through a temporary period of depression. There probably are few readers, likewise, but realize that the causes are within the industry and that intelligent and aggressive steps are now being taken by leaders in aeronautical activity to remedy the conditions which temporarily have handicapped the development of aviation.

The last year has witnessed a tremendous expansion in aircraft production facilities—but it was not accompanied by a similar expansion in sales facilities. In consequence, the market for planes was clogged. Manufacturers who started the year in high hopes, and with ambitious programs amply financed, soon found that their product would not sell itself. The industry found itself embarrassed with greatly increased production before sales outlets had been developed to take care of it.

The situation is now being remedied, and aggressive sales organizations are being developed to analyze the market, intelligently develop and cultivate prospects, and to build sales just as it has been necessary to promote sales of automobiles and similar products.

The transport branch of the industry has been similarly handicapped during the last year, due to the fact that traffic did not increase in proportion to the rapid increase in air transport facilities. Here, again, it was found that the difficulty was largely due to the lack of a sales program. The novelty of air travel has worn off; the public now must be sold on it as a practical and profitable business proposition. To this end leading operators are now revising their rate schedules and selling their services aggressively.

The industry, therefore, is justified in starting the new year with optimism, in the knowledge that constructive readjustments of business plans and sales policies will be certain to make 1930 a year of outstanding accomplishment in aviation. For the year which has just come to a close has been one of remarkable progress, despite the feeling that it did not come up to the mark set for it. Scheduled flying miles increased fifty per cent over 1928, and it is estimated that miscellaneous flying was doubled, along with a nearly similar increase in number of passengers carried.

I BELIEVE IN AVIATION!

"Not because it's a 'game,' but because it has unlimited possibilities of usefulness as a factor in modern transportation. I KNOW—just as surely as I know that I have eyes to see—that *Speed*...and *more* Speed...is the most vital thing in business today. I know that a thousand lines of business—in a thousand details requiring Speed in Transportation—can be better served by Aviation than by any other means of moving things and men. And, knowing this, I know that Aviation is here to stay.

"Glimpsing the tremendous future of this industry, I am determined to have a man's part in its development. I hereby highly resolve that I will, in future, always treat, think and speak of Aviation *as* Transportation—as a serious, constructive business force. I will give the best that I have to its permanent development. I will never allow myself to become discouraged by mishaps, by temporary setbacks, or by the pessimism of others. I will do my particular job in the best way that I can conceive of its being done; I will constantly seek to find better ways of doing it, and I will stick to that job until the last dog is hung!

"For—today and tomorrow—and as far as my imagination can project itself into the future...with all my heart and soul...I BELIEVE in Aviation!"

This splendid creed for the aeronautical industry is being distributed by Cliff Henderson, manager of the Show Section of the Aeronautical Chamber of Commerce of America

Below, Erle P. Halliburton, president of Southwest Air Fast Express, and at right, passengers boarding one of the company's planes at Tulsa.

SELLING Air

Operation Plans of Southwest Air Of This Line's Recent Sharp

By Dudley W.

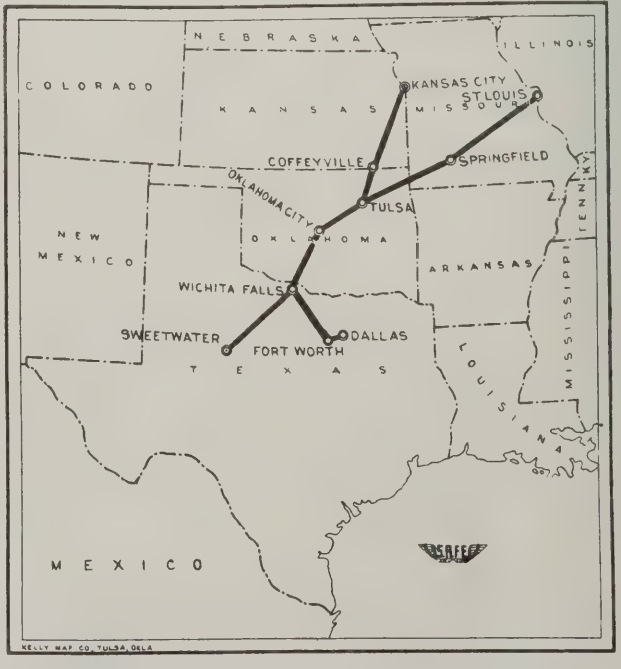
WHEN a plane owned by Erle P. Halliburton of Duncan, Okla., and Los Angeles, Cal., won the transcontinental air derby of its class in 1928, the immediate result was the establishment by Mr. Halliburton of the Southwest Air Fast Express, one of the leading air transport lines in the country, with headquarters at Tulsa, Okla.

Inspired by the success of his plane in the race Mr. Halliburton became an aviation enthusiast and decided to make it his business. He investigated possibilities for an air line between St. Louis, Kansas City and several cities in Oklahoma and Texas, with the result that his company was organized and on April 2, 1929, actually started operations with Ford tri-motored plane equipment. During the seven months the line has been in operation it has attained front rank in the passenger-carrying air line business.

Stressing courtesy, service and safety as features of his organization, Mr. Halliburton soon has his line in public favor and was doing a profitable business. With the backing of influential men of affairs in the Southwest with whom he surrounded himself, giving him ample capital and resources and enabling him to start operations with the most complete and modern equipment, he soon established public confidence in air travel on his lines. The company's business, having increased over seven times in seven months, thus presages a splendid return on the investment.

In advertising its business, the Southwest Air Fast Express employs the personal rather than mechanical element, and thereby lies an insight into its outstanding success, .

Traffic representatives of the company in the different cities on the line act as personal representatives of Mr. Halliburton and make a practice of checking up on patrons in their respective localities. After a patron has made his first trip over



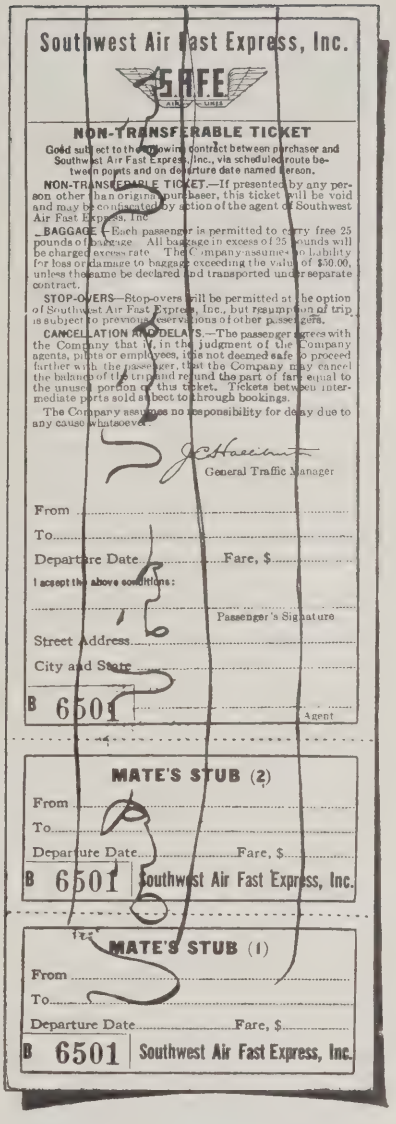
Map of Southwest Air Fast Express Lines

The company maintains regulation ticket offices, while passengers are transported to and from the airports in 14-passenger trailers hooked on behind ordinary motor cars.

Transportation

Fast Express and the Results Cut in Passenger Tariffs

Moore


Southwest Air Fast Express, Inc.
SAFE
NON-TRANSFERABLE TICKET
Good subject to the following contract between purchaser and Southwest Air Fast Express, Inc., via scheduled route between points and on departure date named hereon.
NON-TRANSFERABLE TICKET.—If presented by any person other than original purchaser, this ticket will be void and may be confiscated by action of the agent of Southwest Air Fast Express, Inc.
BAGGAGE.—Each passenger is permitted to carry free 25 pounds of baggage. All baggage in excess of 25 pounds will be charged excess rate. The Company assumes no liability for loss or damage to baggage exceeding the value of $50.00, unless the same be declared and transported under separate contract.
STOP-OVERS.—Stop-overs will be permitted at the option of Southwest Air Fast Express, Inc., but resumption of trip is subject to prevailing reservations of other passengers.
CANCELLATION AND DELAYS.—The passenger agrees with the Company that if, in the judgment of the Company agents, pilots or employees, it is not deemed safe to proceed further with the passenger, that the Company may cancel the balance of the trip and refund the part of fare equal to the unused portion of this ticket. Tickets between intermediate ports sold subject to through bookings.
The Company assumes no responsibility for delay due to any cause whatsoever.
General Traffic Manager
From
To
Departure Date Fare, $
I accept the above conditions:
Passenger's Signature
Street Address
City and State
B 6501
Agent
MATE'S STUB (2)
From
To
Departure Date Fare, $
B 6501 Southwest Air Fast Express, Inc.
MATE'S STUB (1)
From
To
Departure Date Fare, $
B 6501 Southwest Air Fast Express, Inc.

Tickets used on S. A. F. E. lines are similar to the forms used by railway lines.

the S. A. F. E. lines, a personal call is made on him by a company representative who inquires about the trip, if it was enjoyable, if equipment and service was up to expectations and answering any other inquiries prompted by the patron, later thanking him for his patronage and letting him know the company appreciated his business.

A card index system is maintained in the general offices at Tulsa under supervision of the general traffic manager. Information relative to calls to be made on patrons is gathered from the consolidated registration lists and sent out to each division representative or agent at each point served by the line where a patron lives or where he boarded the ship. If from a distant city, a letter is dispatched to him from the general office; or if he is a regular patron in the city, he is usually called by phone. Regardless of where he may live, the company always gets in touch with him.

Full loads are carried since the rate reduction was put into effect January 1

This personal contact between the company and its patrons has brought about an unusual spirit of good will and understanding, the real keynote of its success.

As an illustration of the business the company has enjoyed by its application of golden rule principles, it might be stated that the Southwest Air Fast Express lines during the month of October carried 1,600 paid passengers, whereas in April of this year, the first month of its existence, 223 passengers were carried. This is an increase of more than 700 per cent.

With its Tulsa headquarters near the geographical center of the country, this line serves a logical territory in the Southwest, enabling its passengers to connect

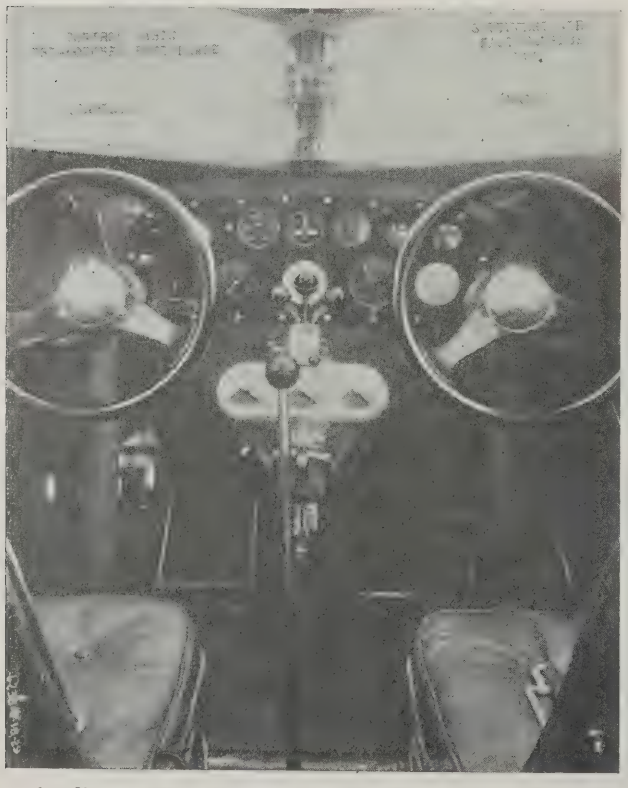
with fast air and rail service to both New York and Los Angeles. Centrally located, it forms an ideal connecting link in the great transcontinental air-rail system from coast to coast.

From its headquarters at Tulsa, it serves St. Louis and Kansas City, the former the eastern terminus, and Coffeyville, Kan., Oklahoma City, Dallas, Fort Worth and Wichita Falls. Connections are made to the East at St. Louis, while at Sweetwater, Tex., western terminus, connection is made with lines for El Paso and Los Angeles. The major portion of the great Mid-Continent oil fields are traversed by the line, and oil men comprise a large portion of its traveling clientele.

Organization of Big Business Men

Heading the company as president, Mr. Halliburton has associated with him a number of prominent Southwestern oil men and bankers, the directorate including W. G. Skelly, president of Skelly Oil Company, Tulsa, and a large stockholder in the Spartan Aircraft Corporation; Waite Phillips, capitalist and banker, Tulsa; Harry H. Rogers, president of Oklahoma's largest bank, the Exchange National of Tulsa; and E. R. Brown, president of the Magnolia Petroleum Company, Dallas. Mr. Halliburton, himself, is in the oil field equipment business. With the backing of these men, he is operating what is claimed to be the most completely and luxuriously equipped air line in America.

At the beginning of its existence the Southwest Air Fast Express selected its name as one which would be known as symbolic of the safety of air travel. The abbreviation of the name, S. A. F. E., spelling safe, is the company's slogan—and it is the foundation of its policy, to make air travel safe. To this end it has purchased dependable and luxurious planes and surrounded itself with the highest type of personnel to man them.



A glimpse of the control cabin in an S. A. F. E. tri-motor plane

Ten all-metal Ford tri-motored cabin ships of 14 passenger capacity each, are in service and six more have been ordered, the company having standardized on this equipment. Control cabins of these planes have dual controls manned by both a captain and a mate pilot, either capable of flying or landing the ship. In addition to daily inspection, the company withdraws its planes from service every three days for complete checking over.

The flying personnel, especially captain and mate pilots, are selected from men who have long flown the southwestern air routes and are thoroughly familiar with the country. Larry Fritz, formerly chief manager and technical adviser, having charge of all flying equipment and personnel at the airports throughout the S. A. F. E. system. R. W. (Bob) Cantrell, who piloted Halliburton's ship to victory in the transcontinental air race, is chief pilot. Mechanics and ground crews are all government licensed men. The company does not maintain a training school for its personnel and each man must be a trained specialist in his line. About 75 men are employed and the payroll averages $20,000 a month.

Comfort of passengers who travel on its line is a feature of the S. A. F. E. service. While the captain pilot handles the ship, the mate gives his time to looking after the needs of the travelers, furnishing newspapers, magazines, etc., and also announcing names of important towns over which the plane passes. Small printed strip maps are furnished the passengers, giving information on the route traversed and pointing out places of interest along the way. Passengers are free to move about the ship as they please, as the upholstered reclining chairs and center aisles allow much freedom of movement. The smartness of appearance of the ship cabin is set off by immaculate uniforms for captain and mate pilots, white duck with yachting caps being worn in summer and navy blue in winter.

Methods of Handling Traffic

In handling traffic the Southwest Air Fast Express follows the system used by railroads with the exception that courtesy and accommodation are more strongly emphasized. Reservation charts similar to pullman car accommodations are provided at all leading hotels and ticket offices in cities along the line. Tickets, similar to railroad tickets in appearance, are sold much on the same order and allow 30 pounds of baggage free, heavier luggage being carried by special arrangement with trains. In the larger terminals downtown ticket offices are being established, these including Tulsa, Oklahoma City, Kansas City and St. Louis.

Transportation of passengers from downtown points to the airport or vice versa is accomplished

Southwest Air Fast Express, Inc.

ERLE P. HALLIBURTON
President
C. E. FLEMING
General Traffic Manager

S.A.F.E. AIR LINES

GENERAL OFFICES
Municipal Airport
Telephone 3-7168
TULSA, OKLAHOMA

ST. LOUIS—SPRINGFIELD—TULSA
14-Passenger Ford Tri-Motored Cabin Planes

Read Down			Read Up
8:30 A.M.	Lv.	St. Louis Ar.	4:15 P.M.
10:35 A.M.	Lv.	Springfield Lv.	2:25 P.M.
12:25 P.M.	Ar.	Tulsa Lv.	12:45 P.M.

KANSAS CITY—CHANUTE—COFFEYVILLE—TULSA
14-Passenger Ford Tri-Motored Cabin Planes

Read Down			Read Up
9:30 A.M.	Lv.	Kansas City Ar.	3:35 P.M.
10:45 A.M.	Lv.	Chanute Lv.	2:15 P.M.
11:10 A.M.	Lv.	Coffeyville Lv.	1:40 P M
12:05 P.M.	Ar.	Tulsa Lv.	1:00 P M

TULSA—OKLAHOMA CITY
14-Passenger Ford Tri-Motored Cabin Planes

Read Down					Read Up
8:00AM	12:50PM	3:00PM	Lv. Tulsa Ar.	10:25AM	12:30PM 5:25PM
9:10AM	2:00PM	4 10PM	Ar. Okla City Lv.	9 15AM	11:25AM 4:15PM

TULSA—OKLA. CITY—WICHITA FALLS—FORT WORTH—DALLAS
14-Passenger Ford Tri-Motored Cabin Planes

Read Down			Read Up
12:50 P.M.	Lv.	Tulsa Ar.	12:30 P.M
2:05 P.M.	Lv.	Oklahoma City Lv.	11:25 A.M
3:20 P.M.	Lv.	Wichita Falls Lv.	10:20 A.M
4:35 P.M.	Lv.	Ft. Worth Lv.	8:40 A.M
5:00 P.M.	Ar.	Dallas Lv.	8:15 A.M

TULSA—OKLAHOMA CITY—WICHITA FALLS—ABILENE—SWEETWATER
14-Passenger Ford Tri-Motored Cabin Planes

Read Down			Read Up
12:50 P.M.	Lv.	Tulsa Ar.	12:30 P M.
2:05 P.M.	Lv.	Oklahoma City Lv.	11:25 A.M
3:20 P.M.	Lv.	Wichita Falls Lv.	10:20 A.M.
4:45 P.M.	Lv.	Abilene Lv.	8:55 A.M
5:10 P.M.	Ar.	Sweetwater Lv.	8:20 A.M

Connects by Texas & Pacific Ry. to El Paso, and by Standard Air Lines to Tucson, Phoenix, Los Angeles and San Francisco. Eastern connections on application.

REDUCED RATES EFFECTIVE JANUARY 1, 1930
PASSENGER TARIFF NO. 9

	Abilene	Chanute	Coffeyville	Dallas	Fort Worth	Kansas City	Okla City	Saint Louis	Springfield	Sweetwater	Tulsa	Wichita Falls
Abilene	*South*	23.75	21.25	13.75	12.25	29.75	12.75	36.25	26.75	3.25	18 25	7.25
Chanute	23.75	*west*	3.50	24.00	22.50	7.00	12.00	24.50	15.00	26.00	6.50	17.50
Cof'yv'le	21.25	3.50	*Air*	21 50	20.00	9.50	9.50	22.00	12.50	23 50	4 00	15.00
Dallas	13.75	24.00	21.50	*Fast*	2.50	30.00	13 00	36.50	27.00	16.00	18.50	7 50
Ft. W'th	12.25	22.50	20 00	2.50	*Exp*	28.50	11 50	35 00	25.50	14.50	17 00	6.00
Kans. C.	29.75	7.00	9.50	30.00	28.50	*The*	18 00		21.00	32.00	12.50	23 50
Okla. C.	12.75	12.00	9.50	13.00	11.50	18.00	*Safe*	24.50	15.00	15.00	6.50	6.50
St. Louis	36.25	24.50	22.00	36.50	35.00	31.50	24.50	*High*	10 50	38.50	19 00	30.00
Springfld	26.75	15.00	12.50	27.00	25.50	21 00	15.00	10.50	*Way*	29 00	9 50	20 50
Swtwater	3.25	26.00	23.50	16.00	14.50	32.00	15.00	38.50	29 00	*Thru*	20 50	9 50
Tulsa	18.25	6.50	4.00	18.50	17.00	12.50	6.50	19.00	9 50	20 50	*The*	12 00
Wchita Fls	7.25	17.50	15.00	7.50	6.00	23 50	6.50	30.00	20.50	9.50	12 00	*Sky*

Baggage Limit—30 lbs. per passenger (Excess at one percent of tariff fare, per pound, with minimum of twenty-five cents per lb.) Special arrangements to be made for baggage in excess of 50 lbs

The new rate schedule of Southwest Air Fast Express, which went into effect January 1, is indicative of the belief of Mr. Halliburton that a further rapid increase in the use of air transportation demanded revisions which now bring rates more nearly in line with those of other transportation mediums. The new rates already have resulted in a tremendous increase in traffic and have necessitated the purchase of six new tri-motor ships.

by the use of special aerocar trailers which hook on behind an ordinary motor car and can carry 14 persons. These are provided at Tulsa, Dallas, Oklahoma City and St. Louis, where traffic is heaviest. At other points seven-passenger sedans are furnished. S. A. F. E. planes also carry express at a charge of one per cent of the cost of a passenger's ticket for the distance, with a minimum charge of $1.00.

At each stopping point on the line, a division traffic manager, so designated, is stationed to supervise traffic and deal with service inquiries at that point. This official maintains contact with the public, hotels, newspapers and railroads and acts as a sort of information bureau and public relations director in matters between the company and its patrons. He is under the supervision of the general traffic manager at the home office and reports to that official.

The dispatching of planes is similar to that of railroads, the chief clerk at each airport office sending a message ahead of each departing plane to its destination, giving information as to the time the ship left, number of passengers carried, etc., while ships being designated by number as are trains. Special teletype machines are provided at headquarters and airport offices for sending messages between these points, eliminating possibility of error. The S. A. F. E. maintains its own weather bureau at the Tulsa Municipal Airport, also its own meteorologist, and pilots are kept in constant touch with atmospheric conditions. This equipment was recently installed at a cost of $5,000.

Recently the Southwest Air Fast Express inaugurated the operation of week-end sightseeing trips over the cities served by it at a small charge, using the regular Ford tri-motored cabin ships to acquaint the public with the convenience and comforts of this new mode of travel. This has resulted in the bringing of many new converts to air travel.

Halliburton's Views of the Future

Speaking of the future of aviation in the South, Mr. Halliburton enthusiastically states that air lines will rapidly eliminate the sparsely settled regions of the South, even those remote from railroads, and will be the means of settling up the vast stretches of thinly inhabited land in certain localities, thus bringing about an increase in, and more general distribution of, population over the South and Southwest. He also looks on air travel as being a solution of the traffic congestion in cities. Furthermore, it will be a matter of only a few years, he believes, before planes will be serious competitors of the railroads in passenger transportation and, because of their greater speed and time saving, they will be used almost entirely for carrying of mail and express.

The South, more than any other region of the country, he said, will reap the benefit from aviation, due to the elimination of a large part of the time now lost in traveling between the widely separated cities of commercial importance.

On January 1st the Southwest Air Fast Express inaugurated a drastic cut in air travel rates from ten cents a mile to about six cents a mile, just slightly above rail charges. In putting this new rate into effect the company wanted to know if people would really travel by plane if given the opportunity, and it was in the nature of an experiment to ascertain whether the public was afraid of plane travel or whether the rates were too high. Company officials had believed the rates were too high and it didn't take them long to find that they were right.

(*Continued on page* 28)

Large Crowds Witness

Noted Southern Pilots Hold the Spotlight in Meet Attended by Crowds from Many Countries

SOUTHERN aviation history was made January 13, 14 and 15, during the All American Air Races in Miami, when Errett Williams, Greenville, South Carolina Dick Statham, Americus, Georgia, and Art Davis, Melbourne, Florida, literally ran away with the first three events of each day.

At Miami Air Races. Left to right: Victor Belaunde, Peru; Ernest Archdeacon, the "Father of Aviation," France; Rafael Belaunde, Peru, and Diego Matule, Venezuela

These three were opposed each by world renouned flyers such as Larry Ruch, American Eagle Aircraft Corporation; Freddie Lund, Waco Aircraft Company; Frank M. Hawks, the Texas Company; Bill Alexander, the Pilot Radio and Tube Company, Brooklyn; Henry A. Little, Jr., Philadelphia; Dale "Red" Jackson, Curtiss Wright Flying Service, Inc.; and George Haldeman, Bellanca Aircraft Co.

A gay, colorful audience witnessed the aerial achievements of those who placed in the varied events. The weather during the three days was excellent with blue skies and plentv of sunshine and the grandstands were filled each day. The crowds were entertained between races by "Swannee" Taylor, well known air meet radio announcer, whose vocal antics caused many a laugh. Taylor reported the races in fine fashion and kept the crowds well posted. The front boxes presented an international aspect, as they were occupied by prominent aviation enthusiasts, representatives of Latin American countries and Europe, military officers of high rank, and winter visitors.

Among the planes at the races were the International Sikorsky, "Northern Star," advertised as one of the largest planes in the United States; the Sikorsky amphibian, "San Juan," flagship of the New York, Rio, Buenos Aires Lines; the low wing monoplane Texaco, of the Texas Oil and Gas Company, which thrilled the crowds by careening around the pylons in an almost verticle bank; the all-metal Ford plane of the United States Marines from the government Naval Air School, Pensacola, Florida; and another Ford plane of the Firestone Rubber Corporation, Akron, Ohio; the Flying Zebra of New Orleans, called so because of the queer markings on the fuselage; and the plane of Pilot Radio and Tube Corporation, Brooklyn. This latter plane, which left directly after the races for an all-commercial tour of South America, is equipped with a complete short

A group of Navy fighting planes from the Naval Air Scho ol at Pensacola, at the All-American Air Meet.

the Miami Air Meet

Above: Errett Williams rounding a pylon in an almost perfect vertical bank in the free-for-all race on the third day of the meet. Left: ships on the line awaiting signal to take the air.

wave experimental radio laboratory. It can both send and receive. A perfect test of the instruments was given when broadcasting was done from the plane as it flew overhead, the messages being picked up and rebroadcast nationally.

One of the big features of the Miami meet was the formal dedication of the first municipal dirigible airship dock in the world. This occurred Monday morning at 9:30 before the races began in the Municipal lighter-than-air craft field, two miles away. James E. Yonge, chairman of the municipal aviation board, was master of ceremonies during the dedication of the airship dock. With him on the platform were City Manager Welton A. Snow, representing Mayor C. H. Reeder; and Jack Boettner, chief pilot for the Goodyear Zeppelin Corporation. Sponsors for the Dirigible, Defender, were introduced as well as those who had a part in the building of the airport. The latter included Mayor Sayre Wheeler of Opa Locka, N. F. Hertzer, operations manager of the Goodyear Zeppelin Corporation and F. A. Petrie, of Akron, a visiting official.

The airship dock was officially dedicated while the blimps, Defender of Miami, and Vigilant of St. Petersburg, soared overhead. The airport hangar was decorated with palms and other tropical shrubbery and hung with banners. After the ceremonies, Mrs. Welton A. Snow, wife of the Miami City Mana-

Thirteen parachute jumpers ready to go aloft in the International Sikorsky Northern Star. These jumpers provided one of the big thrills of the All-American Air Meet

ger and chief sponsor, with her assistants, ten pretty debuntantes, were given an official ride. The blimps remained aloft throughout the day, hovering above their orange and black hangar which attracted much attention from the crowds.

A number of planes expected to attend the meet did not reach Miami because of unfavorable weather conditions prevailing in some of the eastern states immediately preceding the opening of the air meet.

Results in the various competitive events follow.

Fifteen-mile race for OX-5 class 3-place planes, the opening event for each of the three days: Won all three times by Dick Statham, Americus, Ga., representing Gulf Airways. On the 13th, flying a Bird, his time was 8-7.5; on the 14th flying a Challenger, time 8-10.1; on the 15th, in a Kinner powered Bird, time 8-3.1.

Other winners were as follows: First day—Harvey Hughes, Melbourne, Fla., 2nd place, time 9-1.5; C. Descomb, Hartford, Conn., flying a Challenger, 3rd place; Herbert M. Toomey, Knoxville, Tenn., in an American Eagle, 4th. Second day—Art Davis, Melbourne, Fla., 2nd prize; W. F. Cummings, Americus, Ga., 3rd; and Park P. Read, Haverford, Penn., 4th. Third day—Art Davis flying a Waco racer, won 2nd place; and Laurie Yonge, Jacksonville, flying a Bird, was 3rd. Prizes for this event were $150, first; $100, second; $75, third; and $50, fourth.

Second event, a 15-mile free-for-all race for planes of the 110-H. P. class: Errett Williams, Greenville, S. C., took 1st prize money all three days, flying in a Monosport the first two days, and in an Eaglerock the third day. His time was 7-9.1, 6-33 and 7-21. Other winners were as follows:

L. H. Sanderson, the Marines' greatest aviator, flew to Miami from Nicaragua, where he has been busy chasing bandits out of the mountains.

First day—Dale Jackson, in a Cessna, 2nd prize; C. M. Nash, Tampa, in a Monosport, 3rd; and R. W. Scott, Washington, in a Fleet, 4th. Others participating included A. E. Redmond, Newark, N. J., in a New Standard; G. N. Keightley, Colorado Springs, in an Eaglerock.

Second day—Dale Jackson, 2nd prize; C. M. Nash, 3rd; Smith Reynolds, Palm Beach, 4th. Others who participated were Leo Allen, Miami, in a Cessna, R. W. Scott, George N. Keightley, and Joe McCormick, Philadelphia, in a Monocoupe.

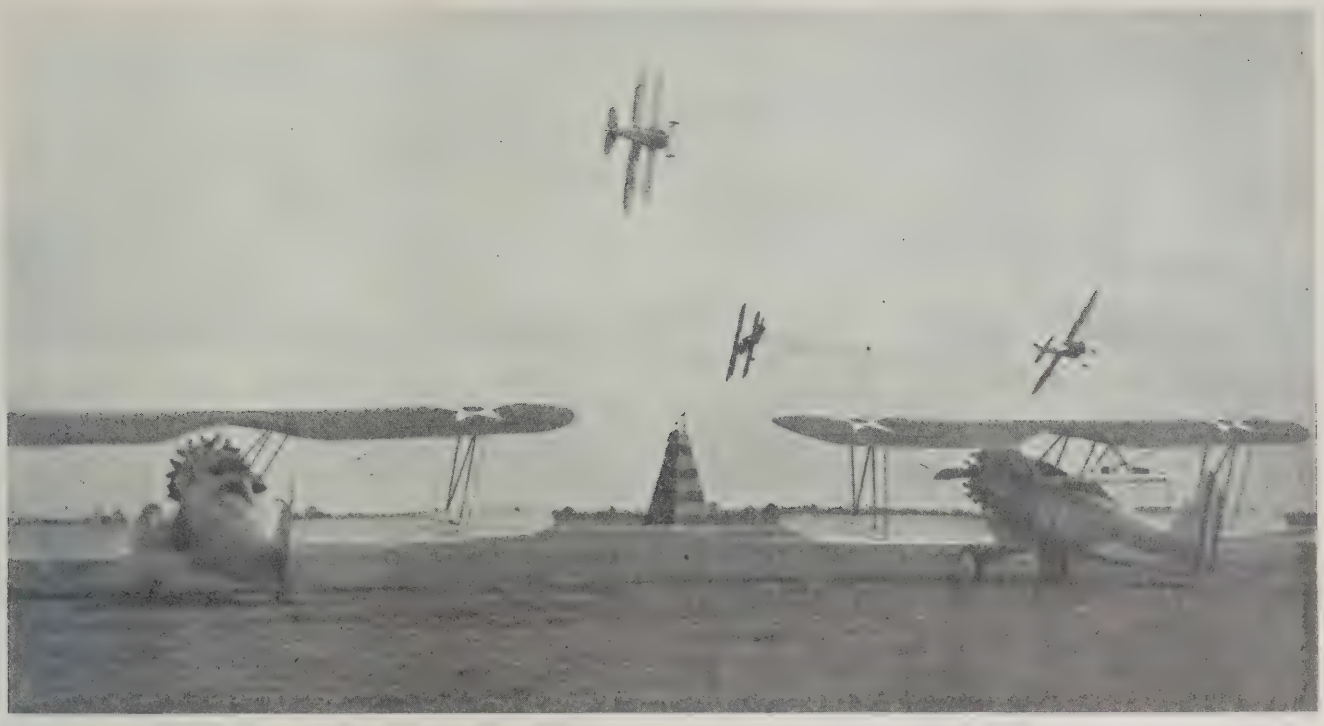
Third day—C. M. Nash, in a Monosport, won 2nd prize; Dale Jackson, 3rd; Smith Reynolds, 4th; and Robert W. Scott, in a Fleet Racer, 5th. Prizes for this event were: 1st $150; 2nd, $100; 3rd, $75; 4th, $50.

Fifteen-mile race for open cockpit planes of 800-cubic inch motor displacement: First day—Art Davis, in his Waco Racer, won 1st prize; Sam R. Bigony, Reading, Penn., flying a Travel Air, 2nd; Dr. J. E. Owens, Asheville, N. C., in an International, 3rd; Errett Williams, flying a Travel Air, 4th. Others in this event were Granville B. Smith, New York, fying a Challenger; and W. L. "Young" Stribling, Macon, in a Travel Air.

Second day—Snydor Hall, St. Louis, in a Travel Air Speedwing, won 1st prize, his time being 6-33.2; Art Davis, 2nd; Ed Ballough, Miami, in a Pitcairn Mailwing, 3rd; and Fred Schwaemele, Miami, in a Travel Air, 4th.

Third day—Art Davis again won 1st prize. Snydor

Left to right: Jose Rivas, of Spanish Embassy; Mrs. Walter Bruns; N. F. Hertzer, Miami Operations Manager of Goodyear Zeppelin Corpn.; J. A. Aguirre, Admiral of Brazilian Navy; W. A. Snow, Miami City Manager; J. E. Yonge, chairman of Miami Aviation Board; Walter Bruns, general manager of Miami Air Races; Frank Petrie, of the Goodyear Company, Akron.



Art Davis, Melbourne, Florida rounding the south pylon of the course during the 800 cubic inch displacement 15-mile race for open cock pit planes. He is flying a Waco racer, and eventually won this race. Sydnor Hall, St. Louis, and A. E. Redmond, Newark, are shown close on Davis' tail. Planes on the ground are two Curtiss Hawks which arrived with members of the squadron from the Naval Air School at Pensacola, Florida. Admiral A. W. Marshall, commander of the school, accompanied the planes.

Hall was 2nd; Al E. Redmond, 3rd. Other entrants included Fred Schweamele, Granville B. Smith and S. R. Bigony. Prizes awarded for winners in this event were $200, 1st; $150, 2nd; $100, 3rd; $50, 4th.

The fourth race each day was a 15-mile event for 800-cubic inch cabin planes: On the first day it was won by H. A. Little, Jr., Philadelphia, in a Monocoupe, his time being 7-18. C. M. Nash was 2nd; Dale Jackson, 3rd; an Van O'Brien, Miami, in a Challenger, 4th.

Second day—Jack Bridges, Wichita, Kans., flying a Cessna, won 1st prize; H. A. Little, Jr., 2nd; C. M. Nash, 3rd; Dale Jackson, 4th.

Third day—Jack Bridges again won first prize. H. A. Little came in 2nd; C. M. Nash 3rd. Prizes awarded winners in this race were $200, 1st; $150, 2nd; $100, 3rd; $50, 4th.

On January 13 a special event for planes licensed only for racing, was won by Art Davis. in a Waco, time 6-23.3. Errett Williams, in an Eaglerock, came in second, his time being 6-41.1. A. B. McMullen, McMullen Aircraft Company, Tampa, in a Travel Air, was third; J. E. Throp, Trenton, N. J., in a Waco Special, fourth; and Dr. J. E. Owens was fifth.

Bomb-dropping contest:

First day—Art Davis won the first prize of $100, with a mark of 32 feet from the target. Sam R. Bigony was second, with a mark of 51 feet, 31 inches, winning $75; Hugh L. Woods, Tampa, was third; George M. Keightley, 4th.

Second day—C. M. Nash, 1st, with a mark of 21 feet, 4 inches; Roger W. Scott, 2nd; H. G. Bissonnette, Miami salesman for the Spartan Aircraft Company, flying a Spartan biplane, 3rd; Bill Alexander, New York, flying a Stinson Detroiter of the Pilot Radio Corporation, won 4th prize in this event.

Dead stick landing contest:

First day—Dr. J. E. Owens won first prize of $100, coming within 36 feet of the marker. Second prize went to Errett Williams, with a mark of 60 feet; while Hugh L. Woods and W. F. Cummings tied for third prize. Other contestants were W. L. Stribling, Don Dice, Dick Statham, C. M. Nash, R. W. Scott, H. McMullen, Clark Smith, Raymond Wesley and Herbert Toomey.

Second day—George Keightley won first prize, landing 4 feet, 8 inches from the line; Larry D. Ruch, in an American Eagle, was second; Wesley Raymond, Lakeland, Fla., in a Bird, was third; and A. B. McMullen was fourth.

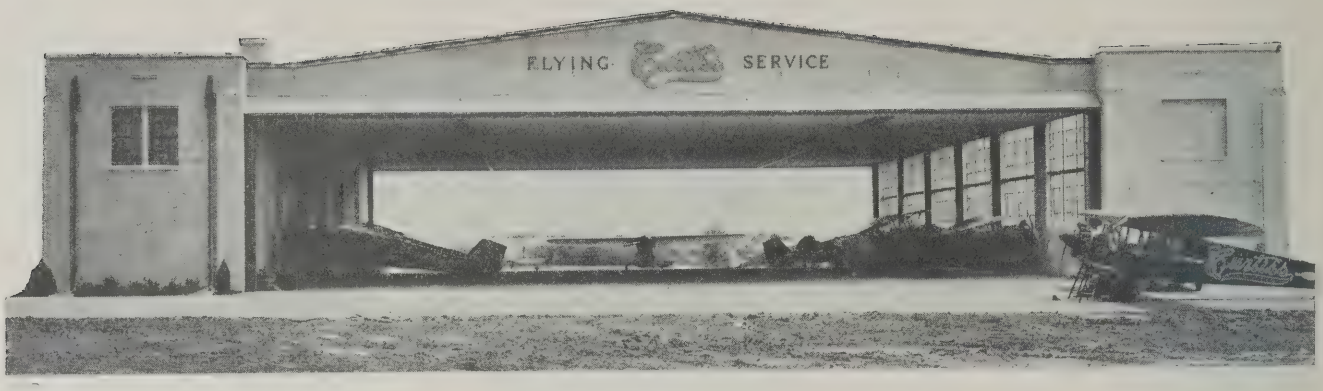
Third day—Hugh Woods, stopping 9 yards, 6 inches from the line, won first prize; Art Davis, 2nd; and W. L. Stribling, 3rd. Other entrants included Frank M. Snydor, Dale Jackson, and C. W. Falk, Jacksonville, in a Bird.

Final event each day, a 15-mile race for cabin planes of 300 H. P.: Following Dick Statham's example in the first race, Dale Jackson, St. Louis, in a Cessna, won this event all three days. Prize money was $200. His time was 5-59.1, 6-10.4, 6-9.2. Other winners were:

First day—H. A. Little, 2nd; George Haldeman, in a Bellanca, 3rd; William Alexander, 4th; and William Snowden, Baltimore, in a Travel Air, 5th.

Second day—Jack Bridges, 2nd; William Snowden, 3rd; and William Alexander, 4th.

Third day—Jack Bridges, 2nd; William Snowden, 3rd; H. A. Little, 4th. Others who competed were C. M. Nash, L. C. Simons, Detroit, in a Verville, and George Haldeman.



The New Louisville Plant *of* Curtiss Flying Service

VISITING airmen who have inspected the new plant at Bowman Field, Louisville, of the Curtiss Flying Service, Kentucky Division, have pronounced it to be the most complete and compact establishment of its kind and size in the country. Here under one roof the company has a large hangar, shop, stock room for supplies, waiting room with all necessary facilities, business offices, executive offices, ground school; and, of course a sales floor in connection with the hangar, and a field school directly in front of the building. The hangar is designed for 24-ship capacity.

In commenting on the new Louisville plant, which was opened last summer, Charles S. Russell, of the Curtiss Construction Department, remarked that it was necessary to combine commercial aviation with taxi or air transport service, sales and service, ground school and field school flying activities. A plant to meet all of these requirements and get away from the old tin-barn type of hangar building, was essential. At the same time it was felt that such a building should be made a thing of beauty, with the result that the landscape architect also had a hand in making the grounds attractive.

This new building is the first of a series of three planned for Louisville, running on a line just to the South of the field limits, the front of the building facing the flying field, and the rear the Taylorsville Road, an important highway, with an interurban line in parallel. Sliding doors facing both the east and west entrances of the hangar slide back into door pockets, giving full entrance at either end to a building that has clear hangar space 120 feet long by 100 feet wide, and 22 feet clearance from floor to ceiling, providing overhead room for larger planes which may be developed later. This big hangar room has no posts or obstructions of any kind. Running its full length, to either side, are rails hung from the ceiling, on which equipment is attached for lifting motors.

Out from either end the concrete floor extends in an apron, 120 feet wide and 50 feet beyond the building limits. As the other hangars are built these aprons will either join one another or will be attached with additional concrete paving.

The door pockets at either side and at each end, each contains five doors, each door ten feet wide and extending from floor to ceiling, the ten doors filling in the 100 foot width when closed, while in mild weather they are pushed back into the pockets and out of the way. The doors roll on overhead rails, as well as on metal floor rails set in the concrete, making them sound and strong even in a high wind.

Lighting is from twenty ceiling receptacles, each equipped with a 200-watt light and reflector, giving good light on motors as well as on the floor about the motors. However, in the newer plants now under construction thirty lights will be used instead of twenty. The lights in this hangar are spaced about 25 feet apart in each direction.

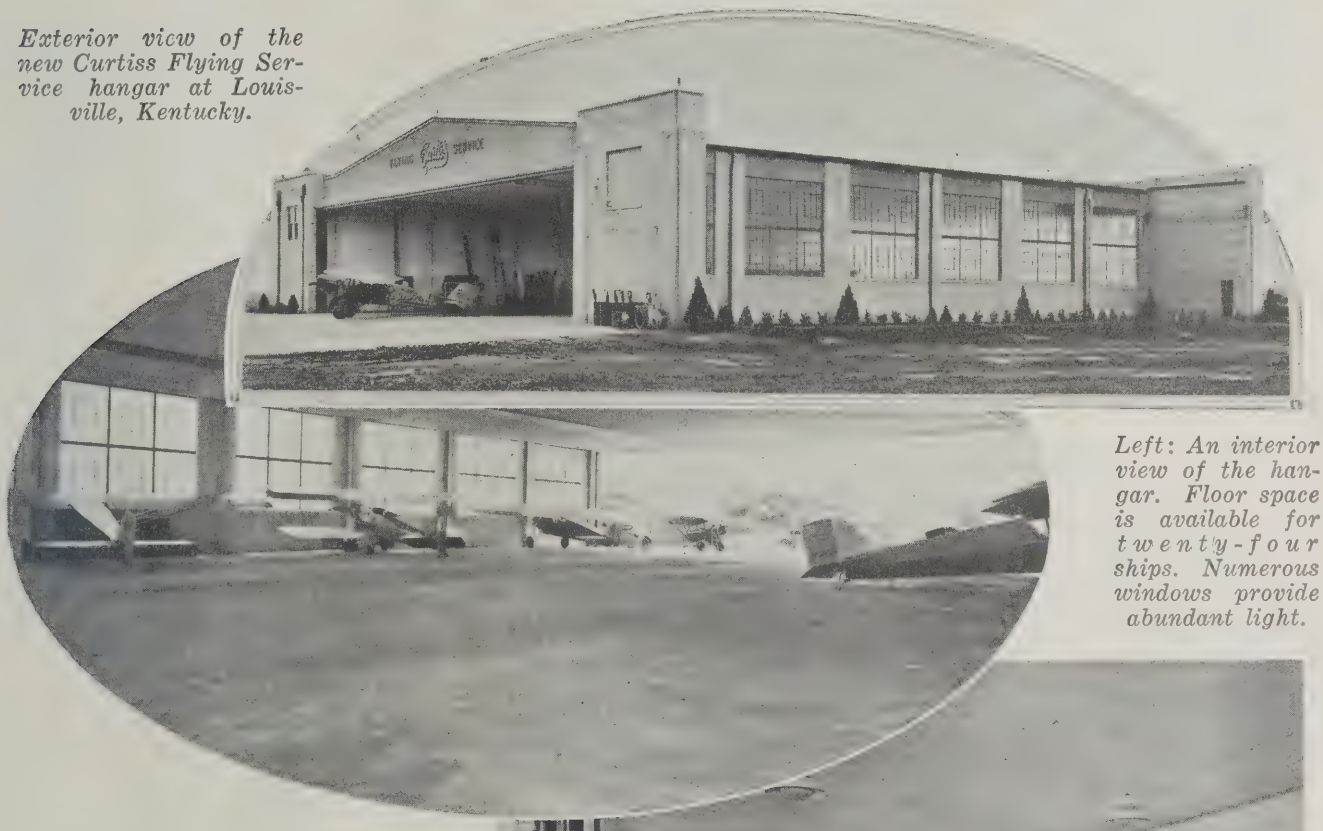
The roof which extends clear over a span 100 feet in width, is carried on welded trusses. Walls carry no roof weight, all weight being carried on steel uprights, although load-bearing hollow tile is used in the side walls.

To the South side there is plenty of natural daylight, from six panels or steel sash, each approximately 15 x 15 feet, set in the wall and divided into six sections each. The sliding doors are also glazed. Between the hangar and shops are automatic fire doors.

Steam from a boiler in the basement under the office section comes to steam coils in a blower system. The cold air is taken from the floor, drawn over the steam coils and forced out in the room, through ducts that are so pointed that the current of warm air will be passing under the wings of planes sitting on the floor. The thermostatic control system is placed on the far side of the building at the coldest point, and set to provide a minimum temperature of 65 degrees at zero.

Glimpses of the Model Plant of Curtiss Flying Service at Louisville

Exterior view of the new Curtiss Flying Service hangar at Louisville, Kentucky.



Left: An interior view of the hangar. Floor space is available for twenty-four ships. Numerous windows provide abundant light.

Right: A view of the shops with a portion of the modern machinery which enables Curtiss mechanics to completely overhaul motors. Machinery for both wood and metal work is provided.

Left: Class room on the second floor of the new building. This hangar was designed to accommodate all branches of flying activity.

Front entrance to the new Curtiss hangar at Bowman Field.

Convenient outlets for compressed air are located at five points, with adjoining hose racks, for the air lines, so that air is available at all points for use about planes. There are also conveniently placed water hose connections and lines for use in washing planes, etc., as well as floor cess pool connections. Hose lines in the far corners of the building make it possible to wash planes on the aprons in good weather, but all connections are indoors, where they are protected from frost.

Another feature of the hangar is the ice water system for employes and guests, the drinking fountains being connected with a refrigeration system in the office, thus supplying ice water to all departmens.

There is also a very complete inter-communication telephone system, which also hooks up to the outside, through the company's own operator, while there is a pay station in the hangar for the use of visitors. The private telephone system reaches every department, relieving the excutives of much leg work.

At the southwest corner of the hangar is the gasoline filling system. There is an underground tank with 5,000 gallon capacity, connecting with equipment, under a metal door, which can be set for any given quantity of gasoline, while the gas line extends overhead, on flexible connections, with a hose coming off the metal pipe, at convenient height for filling planes. At this same corner, but just inside the hangar is a row of oil drums, with hand pumps, for supplying lubricating oils. This service feature is in addition to the field service, the company operating a special mobile truck on the field, equipped with electric heating and air pressure equipment, for servicing planes on the line.

The only basement about this building is a comparatively small one, 20 x 30 feet. containing an oil burning heating plant, a hot water storage system for showers, etc., and an electric air compressor to furnish compressed air to all departments. This basement is not under the hangar, but under the administration division.

Opening from the hangar, and connecting with a large fire door, is a spacious shop, wide and long, with excellent natural lighting and equipped with all modern machinery, including lathes, valve grinders, jig saws, welding equipment, drill presses, etc., for metal and wood working.

Around the north side, or entrance side of the building, facing the flying field, the visitor steps into a lobby. One end of this contains a door leading to the shop. At the other end is the parts sales window. A central stairway leads up to the wide and commodious waiting room on the second floor. This room, like the lobby downstairs, is finished in a Tiffany antique brown blend, which resembles polychrome as to plaster, the woodwork being in a slightly darker shade. Connecting to the waitng room at one end is the ground school room, well lighted, with large seating capacity and with blackboards along one entire side.

At the other end of the waiting room is a passageway on which are located the ladies and men's wash rooms, equipped with toilets, wash stands, showers, etc. A window, with an attractive Spanish type hammered iron grill, opens into the waiting room from the ticket and information department. A series of rooms along the north side, opening on a passageway, house the executive force, accountants, etc., as well as the telephone operator and dispatcher.

On a passageway behind the supply room, and connecting with the hangar as well as shop, are the shower rooms and locker rooms for pilots, mechanics, etc. The basement is reached from an outdoor stairway, but everything else is under shelter.

Mr. Russell remarked that in all other buildings under construction a passageway was arranged so that it is possible to go directly from the lobby to the hangar, without passing through the shop. This was overlooked in the Louisville plant.

The students' room on the second floor, in addition to being reached from the waiting room, also has a stairway running down to the outside, so that students may enter the school room without coming through the waiting room.

About the building, on both sides, much landscaping and sodding has been done, concrete walks constructed, etc. Excellent judgment was shown here. The walks were not put in until persons walking about had marked out the paths that would be most generally used . Where the beaten paths were made, the sidewalks were installed.

Since the Continental Air Lines use this hangar, and in view of the company service in handling the air mail out of Louisville, a room was set aside for

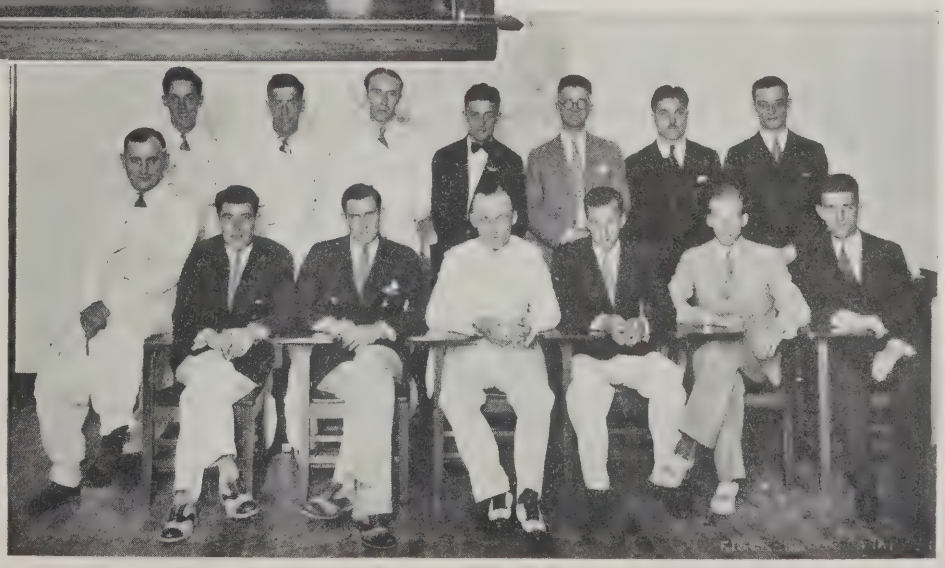
(*Continued on page* 36)

Every Convenience is Provided for Patrons in the Curtiss Building at Louisville

The waiting room and ticket office on the second floor of the new Curtiss hangar at Louisville. This room is finished in Tiffany antique brown blend with woodwork of a slightly lighter shade.

Entrance to the hangar from the east end. The stairway at right leads to the waiting room.

Left: A corner of the stock room situated on the first floor. Equipment for attractively displaying a complete line of airplane accessories has been installed in this room.



Right: Manager and personnel of the Curtiss Flying Service at Louisville. These men are in charge of the various units composing the Curtiss Flying Service. They are making the Louisville branch one of the most popular of the Curtiss chain.

Errett Williams and some of the cups he has won. In addition to twenty-nine cups and trophies, he has collected $15,000 in cash prizes during the past five months.

Cashing In as a

The Story of Errett Williams, his Flying Service, Race Records and Sales Experience

OVER in South Carolina, Errett Williams, president of the Williams Flying Service at Greenville, is known as "Missionary" Williams. In other parts of the country his name is synonymous with airplane racing.

Back in 1926 when there was not an airport in the state, Williams left the Gates Flying Circus and piloted his "high-powered" Standard over the Blue Ridge Mountains into South Carolina, to resume barnstorming activities which he had left off to join the circus. At that time South Carolina was regarded as a sort of last frontier for such activities. Barnstormers had no territorial bounds, but few of them had met with success in the Palmetto State.

Williams landed his plane in one of the famous South Carolina cotton "patches" on the outskirts of Greenville. On the fuselage of his plane was written: "Ride with me—$5.00." However, few of the curious crowd who gathered around his plane, when he was not in the air advertising, cared to take a chance. Williams was beginning to believe that the popular tune, "Nothing could be finer than to be in Carolina in the morning," which was sweeping the country at that time was highly misleading, at least as far as aviators were concerned.

Through some skillful salesmanship a certain Will Rogers—no relation to the famous Oklahoman — was persuaded to be the first passenger to ride with Errett Williams in South Carolina. He became a flying enthusiast and started a flying boom in Greenville that soon spread over the entire state. He bestowed the sobriquet of "Missionary" upon Williams, and did some missionary work himself in creating an interest in flying. Over 2,000 passengers were carried aloft in the Standard within the next three months, from an improvised airport near the city.

Before establishing permanent headquarters in Greenville, Errett Williams carried aviation into every town in the state that afforded a cotton field large enough to land his OX Standard. He was the first flier to make a success of barmstorming in South Carolina. He convinced city officials in many towns that they would some day need airports, and awakened them to the future possibilities of the airplane.

During the years he has been engaged in establishing his flying service at Greenville, he has never been too busy to lend his aid and advice to other towns in the state in building airports. On New Years day a man came into the operations office at the Greenville airport and inquired of Mr. Williams if there was an airport or landing field at a certain small town in the state. Upon being told that there was he hesitated, and demanded further assurance. He got it when Williams replied, "I drove the tractor in preparing that field." He is still doing his bit to help South Carolina keep pace with other states in aeronautical development, and is still "Missionary" Williams in his adopted state.

This photograph, taken at St. Petersburg, Fla., shows Errett Williams, above, during his barnstorming days with Gates Flying Circus. Below, left to right, are Pilot Jack Ashcraft, Diavalo, the wing walker, and Pilot Ivy McKinney.

Errett Williams was one of that band of war-time aviators who refused to believe that the airplane's usefulness died with the armistice.

When the United States joined the Allies he was a cavalry officer in his native state of Kansas. He transferred to the Air Service soon after the declara-

PLANE DISTRIBUTOR

By B. H. Vincent

At the right are shown Errett Williams and George Keightley, sales promotion manager for Eaglerock planes. Below is a recent photograph of Mr. and Mrs. "Missionary" Williams.

tion of war, taking his first ride in an airplane with Vernon Castle, the famous English dancer, who had been assigned to Army training school at Fort Worth, Texas, after active duty at the front.

Williams was commissioned at Kelly Field, and transferred to Dayton, Ohio, for gunnery instruction at Wilbur Wright Field, from whence he was sent to the front as a pursuit pilot. Further training at the Third Aviation Training Center at Issoudun and he started "getting on with the war" on night flying duty.

From the day he entered aviation at Fort Worth, it has been his only business. After returning home from the war he took time out just long enough to get married.

An Airplane Distributor in 1919

Immediately after the war he was appointed Curtiss distributor for Kansas and Missouri. He sold 43 planes within 18 months after taking the agency. He was not only a salesman but an instructor as well; for the purchaser of an airplane at this time took it for granted that he was to get a course of instruction with the plane.

In length of service, Williams is a real pioneer in airplane distribution; for in 1919, of course, such a term as "airplane distributor," was practically unknown. His acceptance of the Curtiss distributorship was a matter of settling down after his marriage. However, this settling down did not take place until he had carried his wife, who was one of the few air-minded women in the United States at that time, on an aerial honeymoon through the Southwest. She later became a pilot and has taken "turn about" with him at the controls on many cross-country jaunts.

He found the market for airplanes in the years immediately following the war to be more or less limited. A few adventurous youths and ex-war fliers comprised about the only market, and when he had exhausted this division he gave up his territory for the more active life of a barnstormer.

Errett Williams says he was never hampered by lack of funds. The reason is evident to any one upon meeting him. He combines showmanship and salesmanship, with an inherent flying ability that inspires confidence in his prospects. No flier in those barnstorming days ever had trouble in getting an audience. The mere presence of a plane was enough to attract a crowd, but getting them to ride was another matter.

The Southwest with its natural landing fields was ideal flying country and the scene of activities for many fliers. With an ancient Canuck, and his bulldog "Jiggs," Williams carried aviation to the back door of residents of the Southwest. His prices ranged from $5 for a short hop to $15 for the "works," which included all stunts in the flier's bag

of aerial tricks. His first act was to pile out his gasoline cans, pitch a tent, and leave the bulldog as guard while he went up and put on a show, flying upside down, spinning, barrel rolling, and then coming down to pick up whoever might want a ride.

Once after putting on a show in an Oklahoma town for an audience composed of cowboys. Indians and oil workers, an Indian rushed up to his plane and asked "How much for a loop?"

Upon being told $10, the Indian peeled off seven ten-dollar bills and handed them to Williams, saying, "Give me seven!"

This Indian happened to be Chief Bowhan, who was a blanket Indian until his initiation to the airplane. He was so well pleased that later he bought a plane from Williams and joined him in barnstorming the country.

As an additional attraction Williams later engaged Frank Armstrong, a parachute jumper, to accompany him on his barnstorming trips over the Southwest.

"Parachute jumping at this time was the height of daredevilry," says Williams. "When we advertised a parachute jump it never failed to draw a crowd, and it seemed to work wonders in inspiring timid prospects to ride, thus greatly increasing business."

Armstrong made over 300 parachute jumps during Williams' barnstorming years in the Southwest.

"About 1925, people in the West and Southwest began to take flying as a matter of fact," says Williams," and barnstormers had to seek other fields for their activities."

Mr. and Mrs. Williams and their dog Jiggs. Jiggs flew for five years with his master

In 1926 he joined the Gates Flying Circus, an organization of crack pilots gathered by Ivan Gates, from the ranks of the nation's best barnstormers. In this flying troupe were such well-known fliers as Captain Collyer, Big Jack Ashcraft, M. M. Merrill, Ivan Gates, and Buck Steele.

On the ground this group of pilots behaved like a group of schoolboys on a vacation, but in the air the old army standards were subjected to every stunt that an airplane could perform. Their record for safe flying is all the more notable now, considering the equipment they used.

Left to right: Chief Bowhan, Osage Indian whom Errett Williams taught to fly in 1919, Errett Williams, Mrs. Williams, and Frank Armstrong, parachute jumper.

Errett Williams, Mrs. Williams, and the plane in which they toured the southwest on their honeymoon in 1921.

Errett Williams left the Circus in 1926 to take up barnstorming on his own again. His flying service at Greenville now is a stopping place for many of the old-timers who have occasion to be flying into the South, while the modern restaurant at the airport inspires many fliers to stop for a southern chicken dinner.

Much has been written and said concerning the taciturnity of fliers. This does not apply to Errett Williams. He is modest enough, but he would never have won the sobriquet of "Missionary" if he had followed the usual pilot's course. He had to sell himself and aviation to the populace in South Carolina just as he did in the early barnstorming days, and that required a lot of talking. But he is no ordinary pilot. He is that rare combination of crack salesman and crack pilot for which aircraft producers are raking the country over.

Williams is distributor for the Alexander Aircraft Company's line of Eaglerock planes. During 1929 his organization sold 30 planes, and started the new year with a rail shipment of planes from the factory. Mr. Williams believes his organization will better this number considerably in 1930.

In addition to being distributors for Eaglerock planes his company conducts a ground and flying school, does aerial taxi work, photography, advertising, and provides hangar storage space for plane owners in and near Greenville.

Mr. Williams has made some personal experiments at his airport to determine the reason for the public's tardiness in patronizing air lines, and has reached the conclusion that it is not fear that keeps them out of the air but high prices which the operator must charge in order to make a return on his investment. During the past summer a "dollar day" was put on at the airport, passengers being offered a ride for a dollar. His planes carried passengers until dark, one pilot carrying 94 aloft and the other 95. Mr. Williams says this is about 80 per cent more than will ride at the usual price of a pleasure hop.

Marjorie Stinson and her Curtiss Canuck, in which she trained fliers for the front during the war. Errett Williams was a frequent passenger in the Canuck.

Territory in which he was originally appointed distributor for Eaglerock products included Georgia, South Carolina, and part of North Carolina, but he has given up all this territory except South Carolina in order to carry out a more intensive selling campaign, concentrating his sales effort in one state.

When asked who the prospective purchaser of an airplane is, Mr. Williams replied, "That's the first thing a dealer should determine. There are many who will buy some day who are not in position to buy at present. Airplane selling requires a closer analysis of the prospect than any business I know of. If a dealer does not know whether a prospect is able to buy before he starts his selling campaign, he is likely to waste valuable time.

"One of the first questions the prospective purchaser asks the dealer is, 'How long before I will be able to make cross-country trips?' This is a perfectly natural question for the prospective purchaser of an airplane to ask. People are beginning to compute distance from point to point as so many hours by air, instead of miles, and every purchaser expects to take advantage of the time saved by air travel. However, this is a question we discuss frankly with our prospects. We do not try to make them believe they can become cross-country fliers overnight."

A group of old timers. Standing, left to right: Cyle Horschem, Tubby Tibbs, Dorsey Askew, Pat Murphy and Chief Bowhan. Sitting: Herbert Kindred, M. M. Merrill, Errett Williams and Merle Brock.

A majority of the planes sold by the Williams Flying Service in 1929 are being used for commercial purposes. Inquiries during the past few months, however, have been from those desiring planes for personal use, and Mr. Williams believes that this class of purchaser will comprise the bulk of plane buyers in 1930.

Not every plane in the line handled by the Williams Flying Service is suitable for present flying conditions in South Carolina. The Eaglerock line includes a variety of planes in different price ranges, and a prospective purchaser may take a fancy to a plane unsuited to his needs. Here is where frank advice on the part of the dealer is needed, and Mr. Williams, or George Keightley, Eaglerock sales promotion manager, makes a detailed study of the prospective purchaser's facilities for caring for the plane, the purpose for which he intends using the plane mostly, and airport facilities at the purchaser's command.

Errett Williams has probably carried as many passengers as any barnstormer who ever operated in the United States. During his barmstorming career he flew in 30 states, sometimes alone and sometimes with a group of his fellow fliers with whom he would organize a flying circus and put on a big show. In this manner he became intimately acquainted with many of the people best known in aviation today, and many who have given their lives to advance the cause of aviation.

From the time he started his flying career with Vernon Castle in Fort Worth, Texas, to the present he has had only two serious accidents. One occured while driving his automobile to Greenville after he had flown an airplane 1,800 miles to deliver it to a purchaser in Hartsville, S. C. On another occasion he fell 30 feet from the roof of his hangar at the Greenville airport while adjusting a floodlight. Hospital treatment was required in each instance.

These are the only injuries he has received during the thirteen years he has been flying, and he has flown everything from the ancient Canuck and Standards to the unique Alexander Bullet monoplane, in which he won $15,000 in cash prizes at various air meets over the country during the last four months of 1929.

Several good aviators have met their nemesis in airplane racing. Errett Williams has had his close calls also, but has been able to meet the crisis in each instance with a cool judgment that has enabled him to avoid disaster.

Perhaps his closest call came recently just after winning a race at McCook, Nebraska. The Bullet has a retracting landing gear which, when drawn up into the wings of the plane, adds 18 miles per hour to its speed. Coming in for a landing at the finish

Errett Williams and Frank Armstrong, parachute jumper, who made over 300 jumps for Williams in 1920

of the race he forgot to lower the wheels, and the plane skidded along on its belly until the propeller struct the ground, bringing the plane to an abrupt halt.

During the last few months he has won in addition to the $15,000 in cash prizes, enough silver cups and trophies to start a small jewelry shop. He acquired 15 of them in three months, bringing his total up to 29. At a recent air meet in Kansas he won three $300 radios in one day. Out of 42 possible first places in races he has entered during the past three months, he has won first place in 32 of them.

In the Philadelphia to Cleveland race during the National Air Races he won $2,000, defeating several planes in the 300 h.p. class.

One of the latest flying stunts of Errett Williams was an eight-hour flight from Winter Haven, Florida, to Washington, a distance of 950 miles, the latter part of January. He carried prize boxes of oranges and grape fruit from the Winter Haven orange festival for presentation to President Hoover.

One of his chief competitors in race events in the South has been Doug Davis. Davis and Williams are perhaps the outstanding commercial racing pilots in America. They have competed against each other in many races.

"Ability to turn the pylons without slipping or skidding and killing one's flying speed is the chief requisite of a racing pilot," says Williams. "Of course, one must keep a clear head and be constantly on the alert, and be capable of making an instant decision in an emergency. Fear and wavering judgment have little place in flying a plane, and especially a racing plane."

In the on-to-Denver race on October 17 from Wichita to Denver, Williams flew the Bullet the distance between the two cities in three hours and 50 minutes, winning the $1,000 first prize. Just before reaching the field the motor of the Bullet coughed and stopped. The gas tank was empty. A sixth, or flying, sense told him he could glide the distance to the field and he made a quick decision that not only won him the first prize of $1,000 but avoided what might have resulted in a serious crash. It was a question of knowing whether a hazardous landing should be attempted, or whether to risk gliding to the field.

The latest honor to come to him is one that most fliers are willing to defer permanently. It happened when he and Shelly Charles, his neighboring Eaglerock distributor in Virginia and North Carolina, were testing a plane several thousand feet above the airport at Colorado Springs. A wing came off during the sand tests for a Government approved type certificate and two more names were added to the membership of the caterpillar club.

Barnstormer's headquarters. Jiggs guarded his master's equipment while he put on an aerial show.

Errett Williams and two Belgian officers, Lieut. Maurice Theis and Lieut. Philip Quersin of Brussels, snapped during a visit to the Greenville airport.

Selling Air Transportation

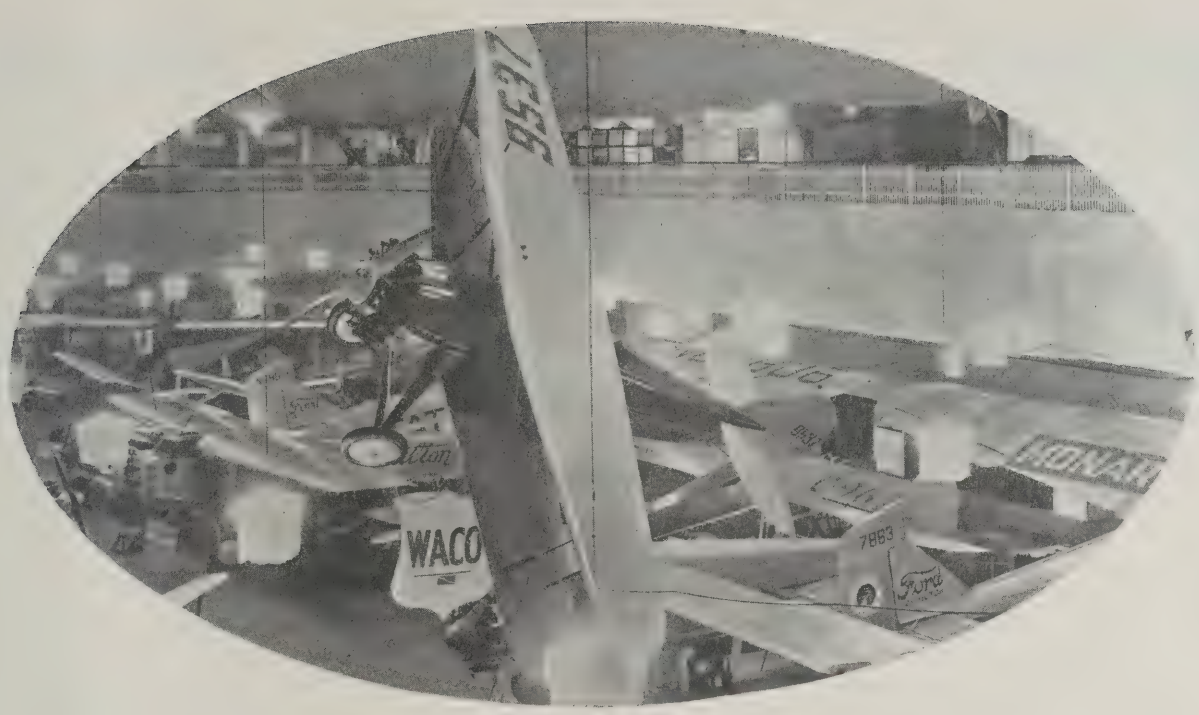
(*Continued from page* 15)

Traffic over the company's lines in the first few weeks since the rate reduction, increased about 300 per cent and an average of sixty passengers a day were turned down for lack of accommodations. It was necessary to sell tickets by allotment only, certain cities on the line being allowed just so many tickets to the capacity of the planes plying between them. There were long waiting lists at each stop.

This big increase in traffic caused recent announcement by the company that it had purchased six new tri-motored ships, giving it a total of sixteen and making this line the largest user of this type of equipment in the country. Certain service expansion, including a possible non-stop plane service between St. Louis and Dallas, as well as extensions on the western terminus of the line, is contemplated.

Earle P. Haliburton, president of the company, in speaking of the results of the rate reduction, said that while air travel would be boosted immensely and that eventually a 3 cents a mile rate might be expected, he regarded rate reductions as only a partial solution of the problem of making passenger air lines self supporting and profitable. Government contracts to carry mail are needed to insure a steady development of the service and an operating profit to the lines, according to Mr. Halliburton, "or else the manufacture of passenger carrying aircraft will have to be developed to a basis commensurate with a transportation charge of around 6 cents a mile."

Emphasizing the need of mail carrying business by passenger lines, in which he is actively interested, Mr. Halliburton said that "unless the Government is willing to use passenger transport lines, flying the same schedules and using parallel routes as regular mail planes, to carry mail, the development of commercial air transportation will be slow and inadequate to meet the demands of modern progress."



A glimpse of last year's International Aircraft Exposition

The International Exposition

THE most representative group of aircraft exhibitors, including both foreign and American manufacturers ever to be represented at a national show, are ready to display their products to the world at the huge St. Louis Arena February 15-23. Practically all available space is occupied by exhibits representing every type of aircraft ranging in price from that of the average automobile to huge airliners costing $100,000.

The great interest already manifested in the event is taken as an indication by aircraft producers of the public's continued and growing appreciation of aeronautical development. The show this year is expected to bring in many prospective purchasers to view the manufacturers' products, which represent the acme in airplane design.

Space in the Arena, which totals approximately 300,000 square feet, was practically all taken the latter part of January. Space in the two wings extending from the central building, houses the dozens of exhibits of accessories and equipment for airplane operators, while the central portion of the building is given over to the nearly 100 planes, representing every type of plane manufactured by leading aircraft producers of the world. The event is hailed in St. Louis as the "World's Air Fair."

The largest attendance to witness a show of this kind is expected, due not only to the fact that the exhibit will be the only Class "A" show to be sanctioned by the Aeronautical Chamber for the year, being international in its scope, but also because of the strategic location of St. Louis, which city is situated about midway between the population and geographic centers of the country.

Plans for the mammoth show were worked out by Clifford W. Henderson, manager of the Aeronautical Chamber of Commerce show section.

A spectacular pageant, depicting the evolution of transportation from its earliest history to today's achievements in conquering the air, is ready for presentation, Henderson states. A cast of talented artists will, each night of the exposition, stage the colorful extravaganza on a specially constructed stage in the central portion of the Arena Building. Many novel and unusual lighting effects are to aid in its presentation.

Cliff Henderson, manager of Show Section, Aeronautical Chamber of Commerce

With the advent of the International Aircraft Exposition, the aeronautical world is planning a concentrated merchandising campaign, which will round out the cycle of its growth and development and will serve to establish it as one of the foremost industries despite its extreme youth.

The industry will assemble its physical achievements and executive, engineering and pilot personnel for the

C. L. Lawrence, Chairman of Show Committee, Aeronautical Chamber

launching of the 1930 merchandising campaign at the Arena, Henderson declares, and the result should prove most gratifying.

As a part of the program of special trade sessions which will be featured at the show, many aggressive automobile distributor and dealer firms will meet with the view of handling aircraft sales in conjunction with their automotive lines. The combination display and merchandising of both land and air transportation products already has appealed to numerous automobile firms throughout the country The sessions to be held during the Exposition are scheduled during the nine days of its showing and will be conducted in conjunction with those of the various sections of the Aeronautical Chamber of Commerce.

One hundred latest design airplanes, including many premier models, will be shown in the huge Arena, and will include several history - making craft, such as Clarence Chamberlain's trans - Atlantic plane, "Columbia," the Curtiss-Tanager, winner of the $100,000 Guggenheim Safety Prize, and the Travel Air Mystery "S" plane, holder of the world's speed record for commercial planes.

F. B. Rentschler, president, Aeronautical Chamber of Commerce

Foreign manufacturers of aircraft are expected to show some of the most recent and revolutionary types of European planes which will afford the American industry, as well as the public, an excellent opportunity to obtain a "close-up" of the development along these lines by leading Continental aeronautical engineers.

The get-together of the industry at St. Louis bids fair to establish a precedent among aeronautic circles with respect to merchandising and industrial display never before equaled.

Following is the list of exhibitors as of January 20:

Aero Corp. of America
Aero Supply Co.
Air Reduction Sales Co.
Air Transportation
Air Travel News
Airway Age
Aluminum Co. of America
American Aeronautical Corp.
American Eagle Aircraft Corp.
American Tel. & Tel. Co.
Associated Oil Co. of Cal.
Aviation
Aviation Engineering
Axelson Aircraft Engine Co.
Balsa Wood Co.
B. B. T. Corp.
Bellanca Aircraft Corp.
Bendix Brake Co.
Berry Bros.
Bethlehem Steel Corp.
Black & Decker Mfg. Co.
Boeing Air Transport System
Boeing School
Bohn Aluminum & Brass Co.
Breeze Corp.
Brownback Motor Lab.
Buhl Aircraft Corp.
Cessna Aircraft Corp.
Champion Spark Plug Co.
Comet Engine Co.
Commandaire, Inc.
Continental Aircraft Eng. Co.
Consolidated Instrument Co.
John S. Cox & Son
Crouse-Hinds Co.
Curtiss-Robertson Aircraft Co.
Curtiss Wright Sales Corp. Group
Curtiss Aeroplane & Motor Corp.
Dare Aircraft Co.
Davis Aircraft Corp.
Dayton Airplane Engine Co.
Detroit Aircraft Corp., Group
Driggs Aircraft Corp.
Earle Aviation Corp.
Eastman Aircraft Corp.
Eclipse Machine Co.
Edo Aircraft Corp.
Elgin National Watch Co.
Endicott Forging & Mfg. Co.
Fairchild Airplane Mfg. Co.
Fleet Aircraft Co. Inc.
Fokker Aircraft Corp.
Ford Motor Co.—Stout Metalplane
General Electric Co.
Great Lakes Aircraft Corp.
Gruss Air Spring Co.
Hall & Brown Wood Wkg. Mac. Co.
Hamilton Stand. Steel Prop. Co.
Harwen Products Corp.
Haskelite Mfg. Co.
Hill Auto Body Co.
Imperial Brass Mfg. Co.
Indianapolis Tool & Mfg. Co.
International Flare Signal Co.
Ireland Aircraft, Inc.
Irving Air Chute Co. Inc.
Jefferson School of Aviation
Johnson Airplane & Supply Co.
Joy Manufacturing Co.
Kendall Refining Co.
Keystone Aircraft Corp.
Kinner Airplane & Motor Corp.
Lambert Aircraft Corp.
LeBlond Aircraft Eng. Co.
Lincoln Aircraft Co.
Linde Air Products Co.
Lockheed Aircraft Co.
Loening Mfg. Co.
Luminous Products Co.
Lycoming Mfg. Co.
Macwhyte Co.
McQuay-Norris Mfg. Co.
Michigan Aero Engine Corp.
Modern Mechanics
Mono Aircraft Corp.
Moth Aircraft Corp.
Nicholas-Beazley Airplane Co.
New Standard Aircraft Corp.
Packard Electric Co.
Parks Air College
Pioneer Instrument Co.
Pitcairn Aircraft, Inc.
Pratt & Whitney Aircraft Corp.
Pyle-National Co.
Quaker State Oil Co.
Radiomarine Corp.
Rand-McNally Co.
Richfield Oil Co. of N. Y.
H. H. Robertson Co.
Jno. A. Roebling Sons' Co.
Rome Wire Co.
Ryan Aircraft Corp.
St. Louis Car Co.
Scintilla Magneto Corp.
Shell Oil Co.
Sinclair Refining Co.
Skelly Oil Co.
Sky Specialties Corp.
Southern Aviation
Southwest Air Fast Express
A. G. Spalding & Bros.
Spartan Aircraft Co.
Standard Oil Co. of Ind.
Stanavo Specification Board
Stearman Aircraft Co.
Stinson Airplane Corp.
Stabilaire, Inc.
Stewart-Hartshorn Co.
Stromberg Motor Devices, Inc.
Summerill Tubing Co.
Supreme Propeller Co.
Switlik Mfg. Co.
Szekeley Aircraft & Eng. Co.
Taylor Instrument Co.
Timken Roller Bearing Co.
Tubular Rivet & Stud Co.
Travel Air Airplane Co.
United Aircraft & Transport Corp.
Universal Aviation Corp.
Universal Flying School
Universal Metal Products Co.
Vacuum Oil Co.
Verville Aircraft Corp.
Waco Aircraft Co.
Warner Aircraft Corp.
Western Electric Co.
Western Flying
Westinghouse Elec. & Mfg. Co.
Westinghouse Lighting Institute
Whittelsey Mfg. Corp.
Wright Aeronautical Corp.
Wyman-Gordon Co.
Dayton Manufacturing Co.
B. Russell Shaw Co.. Inc

The Problem of Training

Airplane Salesmen

By L. R. Dooley

Mr. Dooley, who is sales manager of the Spartan Aircraft Company, Tulsa, Oklahoma, discusses in this article a subject of vital importance to the aeronautical industry

THE number of airplane salesmen in the United States, with a proven record of airplane sales, can be counted on the fingers of both hands. The qualifications of a good airplane salesman are as follows:

(1) He must be a transport pilot.

(2) He must have a past record of sales and business experience.

(3) He must have a pleasing and forceful personality.

It is easy to secure the services of a good transport pilot. Hundreds of them come into airplane offices every month applying for positions. It is easy to hire top-notch salesmen from other lines, particularly automobile and real estate salesmen. But looking for a real salesman, who can also fly, is like looking for a prize fighter who can play the flute.

We have tried to use salesmen who are not fliers. In this case we have had to do one of two things: send them out on the train or in automobiles, or send them out by airplane with a transport pilot.

The first method has almost invariably failed because airplanes cannot be sold out of picture books, no matter how glib the salesman. A prospect who intends to spend thousands of dollars on a piece of equipment insists on seeing the actual machine he is going to buy. If he is a pilot, he wants to fly the ship and satisfy himself as to its flying qualities. If he is a non-flying prospect, he still wants a ride in the airplane to get an idea as to comfort, visibility, etc. Although the superficial aspect of aviation may be quickly learned by a salesman with an active mind, the more technical details, which invariably become involved in the discussion leading to a sale, are learned only after long experience.

This is particularly true, of course, if the salesman is talking to a pilot prospect. A flier instantly spots the fact that the salesman is a "keewee," and from that time on has very little confidence in the salesman's statements regarding his product.

In the second case, that of sending a salesman out by plane with a licensed pilot, an economic question is involved. The profit on airplane sales today is so small that the expenses attendant upon sending out two men, paying their salary and expenses, and the expenses of the airplane, is seldom justified by the results. The following rough estimate gives an idea of the economic problem to be faced:

(1) Pilot's salary and expenses, $550 per month.

(2) Salesman's salary and expenses, $550 per month.

(3) Expenses of maintaining airplane on road, including depreciation, interest on investment, maintenance and insurance, $500 per month.

This gives a total of cost of $1600 per month for keeping such a crew on the road. Inasmuch as the average factory profit on a ship in the $6000 class is seldom more than $500 per ship, it is readily seen that an outfit such as is described would not break even on the sale of three ships per month. At least four ships per month would have to be sold before the factory made even a small profit.

I do not know of any airplane salesman in the United States who can average four airplane sales per month. Any salesman who can prove that he can consistently sell even three airplanes a month can name his own salary.

The Spartan company, at the present time, employ none but transport pilots on its sales staff. Even though some of our men lack business and sales experience, we try to pick fellows who make up for this by their natural enthusiasm and ambition to succeed.

In the past two years, when the airplane market was a buyers' market, many ships were sold by pilots because a natural demand existed. However, the situation in the last six months has changed. Manufacturers are confronted with a sellers' market. A temporary period of saturation has been reached, and real salesmanship must be employed to distribute airplanes in the coming year. It is easier and less expensive to train enthusiastic young pilots in the elements of salesmanship than it is to make transport pilots out of non-flying salesmen. With this in mind, we have built up a corps of eight pilot

salesmen, a few of whom have had past sales experience, but most of whom are primarily pilots with a good past record of sobriety and safe flying.

In training these men, methods similar to those employed by other large manufacturing companies are being employed. Each man, before he takes out his first ship, spends two weeks at the Spartan factory and airport, where he is thoroughly grounded in the engineering and production details of his airplane, and in the background and history of his company. This is on the theory that the first law of salesmanship is that the salesman must have a thorough knowledge of the product to be sold. The salesman meets the various executives and engineers of the company and gets their advice. He flies the ship at the airport and goes along on a demonstration with the test pilot, who shows him the performance and maneuverability of the ship and the various strains it is capable of withstanding. Thus the second law of salesmanship is fulfilled, namely, that to sell any product, the salesman must be thoroughly sold on it himself.

After a conference with the sales manager, at which time the salesman is acquainted with his companies' method of doing business in the field and the little details regarding the follow-up system on prospects, communication with the factory, insurance, etc., the sales-pilot is ready for his first tour.

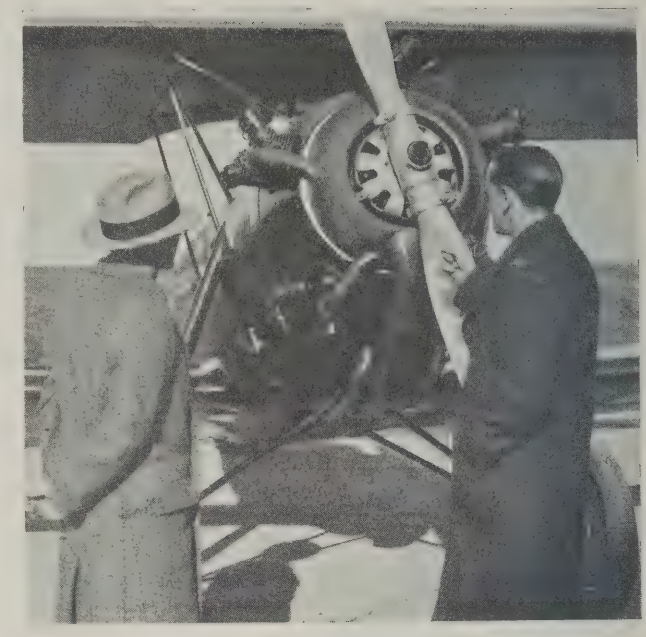
The New Salesman's First Trip

On his first trip the salesman generally hits virgin territory. He is frankly told that too much is not expected of him. He is not, however, sent out "cold," as he is given usually 20 or 30 leads which have come into the office as the result of the companies national advertising and direct mail campaign. After his first two or three weeks in the territory, whether or not a sale has been made, the salesman is called in to the factory for a discussion of conditions in the territory and advised as to working it further.

Once every three months, all salesmen, regardless of location, are called into the factory for a two or three days sales meeting. It is generally informal and democratic. Every salesman voices his experiences, and policies are formed, as the company realizes that all aircraft factories are new and inexperienced at the problems of aircraft distribution, and that the men actually in the field are those best able to grasp conditions and the reaction of the public.

Each salesman is called upon to tell the others the sales methods which have been successfully used by him or to relate any interesting experiences which may be helpful to the other salesmen. In addition, the salesmen are taken into the factory and given a type lecture, which may be used at such times as they themselves have occasion to take a prospect through the plant. The salesman is also given a demonstration of the plane as it stands on the ground in order to instruct him in an orderly presentation of his ship according to the best sales psychology.

At this meeting the men are addressed by various members of the organization, such as the chief engineer ,who discusses the aerodynamic properties of the airplane and tells of projected new models, and the service manager, who talks on methods of handling customers on service.



Salesman pointing out some of the features of a Spartan plane to a prospect

In furthering the process of the salesmen's education, the sales manager acts as a sort of a field general and circulates constantly among the different salesmen, helping them with their problem. A week prior to the sales manager's visit to the territory, the salesman is asked to line up his best prospects and lay out an itinerary for a week's trip. In this way the sales manager covers all the different territories alternately, helping each salesman with his hot deals, and bringing to bear on the salesmen's problems whatever additional experience or information the sales manager may possess.

Each salesman, when he joins the company, is furnished with a salesman's handbook filled with statistics regarding the company and its product, and additional information regarding airplane maintennce, costs, insurance data and answers to typical questions that the prospect might ask. This handbook is in loose leaf form and is supplemented from time to time with new price lists, specifications, dope on new models, and other sales aids.

The company picks its pilot salesmen with care and gives them to understand that they will be given a thorough trial. Ninety days is not considered too long a time for a new salesman to travel his territory without resulting sales. The thought is that the men will be gradually educated by the company, and that after the sales force expands the original members will represent assistant sales managers, who will take under their wing junior salesmen for the more intensive cultivation of their territories.

Wherever possible, the factory promotes men from the ranks rather than looking for outside talent. Occasionally a promising flier, who has secured his transport license in the Spartan School of Aeronautics, a subsidiary institution, is educated and sent on the road as a salesman.

An Analysis of Our Sales Problems

By Ray W. Brown

Manager, Central Sales District, Detroit Aircraft Corp.

I HAVE noticed recently the discussion you have had in SOUTHERN AVIATION relative to airplane sales, and I am more or less hesitant to enter this discussion due to the fact that I feel this industry of ours is so beset by growing pains we can hardly place our finger on the seat of all our complaints.

So much can be said of the different phases of our business that it behooves each of us who is cut out for some particular phase of it to apply himself and do a good job of thinking. I once worked for one of the country's largest piston ring manufacturing concerns. The sales manager's pet expression was the word "Think." Regardless of the problem you were confronted with, his answer to you nine times out of ten, first was "Think."

My feeling about aviation is quite along the same line. If we but analyze our problems and think out ways of applying this motored and winged machine that we call the airplane to commercial and private uses, our pains caused by over-expansion and over-enthusiasm will be materially reduced. The general public is ever ready to listen to new ideas and to adapt themselves to using new ideas.

Aviation is passing through the exact evolution as to its uses and applications that the motor car did. Who ever thought when we saw the first one-cylinder chug buggy (as we called them then) that it would develop to a point where almost everybody in this old U. S. A. would have one of his own who would have believed it would develop into a six-wheel ten-ton truck? It was an experiment and a luxury, and a luxury it remained practically until Mr. Ford said, "I will build a car for the multitude."

With a burst of enthusiasm the wheels of industry sprang forward. New cars came into the field. We had scores of manufacturers of automobiles at one time in that industry. The public was canvassed and educated to the uses of this "chug-buggy" to such a complete degree that now who thinks of being without one if it is humanly possible to dig and scrape enough change together to purchase it, whether it be cheap or expensive? We, the public, finally accepted and now demand the motor car.

Let's just look at our aviation child. It is right now where the motor car was in exactly the same period in its life. We are right now at a point in the evolution of this air industry where the application of the product has more to do with the future of aviation than any one phase of its existence.

Money? We have it. Pilots? We are training them very fast, but not quite fast enough. But the great multitude of prospective users of the airplane remain almost untouched. What we need is proper methods of education to be used on the public in showing the many uses to which the plane can be put.

As I see it, we have a very reliable method of saving that most treasured element of life, namely time. Why not analyze our fields and develop every avenue of use to which the plane can be placed? To develop these avenues will require the proper choosing of personnel and field representatives who are competent to go to the public and intelligently sell the possible users of the airplane on its dependability and application to the individual case. Individual purchasers will have to be canvassed. Corporations will have to be worked with and their executives shown where the plane fits a distinct need of time and money saving.

For instance, electric power companies who have long lines of high tension transmission lines to be checked and sub-stations to be inspected; large oil companies who have vast properties to supervise constantly; large real estate organizations who wish to transport people to and from their holdings; consruction companies who have scattered points of activities; railroads whose trunk lines can be better served by air shuttle lines; banks who need more rapid clearing house service; fruit companies who wish to reach the market with their choice fruit without the slightest damage to their product; big machine manufacturing plants who have products that are in service at varied points in the country and wish to keep them properly serviced (such as big compressors for gas booster stations on pipe line); manufacturers of small items who have large areas to cover with representatives, such as shoe manufacturers, grocery wholesalers, hat and garment manufacturers.

Everyone of these organizations could use the airplane to a great saving of time and money. Remember, the list is entirely exclusive of the large air transport companies who will consume several transport planes over a period of years; also the school that operates several trainers and the individual who has the desire to own his personal ship. All of

these are outlets for airplanes, to say nothing of the trans-oceanic and inter-island communicative lines.

In fact, as I see aviation, it is going to evolve to its peak of acceptance actually faster than the motor car, when all phases are considered, due largely to the fact that aviation has had more money placed at its disposal than any other known industry. The truth of the matter is, we have had entirely too much money in aviation, and in a number of cases it has been very unwisely spent. The time is at hand where economy, judicious spending and analytical selling in aviation must be accomplished in order to reach our goal—that of universal acceptance. This latter automatically results in sales and production.

This comment embodies my true feeling toward the industry at this time after some few years of active sales experience in the industry.

Methods of Building Airplane Sales

By J. A. McInaney
Vice-President in Charge of Sales,
Alexander Aircraft Co.

RECENTLY the market has fallen into its traditional pre-winter slump. Yet our sales showed the temporary depression to be no greater than last year. In view of the fact that we now face greater competition, I believe this to be an optimistic sign.

The growing adoption of cabin craft will stabilize the year-around demand as the sedan and coupe tended to equalize the automobile seasonal trade. In order to take advantage of this changing market we are developing a superior cabin plane.

More scientific sales plans by the factories and better methods, more investment and harder work by the distributors will move many thousands more airplanes than are now sold. The average airplane distributor today is a pilot who has gone into business and depends on a flying school or airline for most of his revenue. He knows little about selling and all too frequently doesn't take the trouble to learn. Failing to sell every prospect he meets he falls into the habit of selling only to those who come in to buy. Our distributors and dealers who have gone after lukewarm and "cold turkey" prospects have closed a surprisingly large number of sales.

Deferred Payment Plans

Deferred payment plans will broaden the market and increase sales. The Alexander Aircraft Company in 1926 became the first manufacturer to offer planes on time payments. Within the past year we have been able to liberalize the terms by organizing our own finance corporation which extends credit to buyers. The terms are practically the same as those in the automobile industry. We ask 40 per cent down, the balance in ten months, and a finance charge of 10 per cent on the unpaid balance. No insurance is required on the plane. We have sold a large number of ships under the provisions of this plan.

J. A. McInaney

For a long time the aircraft market was such a ready-made proposition that many factories were content to sell directly from the factory and thus dispense with distributors' and dealers' discounts. They neglected to build up a field sales force and now find themselves handicapped. Planes must be sold in the field now.

The Alexander company rather expected this turn of events. Three years ago we began building an international sales force which now covers the United States, leading Canadian provinces and the territory of Alaska. We have 35 distributors and 143 dealers. Our policy has been to extend ironclad territorial protection. No distributor can expect to compete with his own factory when it comes to selling planes in his territory. We let him do the whole job.

During the past year and a half we made a concerted effort to enlist automobile agencies as distributors and dealers. The campaign resulted in a large number of sales and the appointment of several successful distributors and dealers. We find southern automobile men especially eager to add an aircraft side-line. It has been our experience that the automobile man has the necessary sales initiative and training and the established position to make airplane sales.

We cover open territories directly from the factory until we are able to place a good distributor. In the last three months we have provided free demonstrator Eaglerocks to pilots or salesmen who wish to work these open territories on commission.

One factory representative recently flew into Memphis, Tenn., sold his demonstrator to a local flying school and sold new planes to a dentist and a business man. He returned there later in another plane and sold it to the flying school. His success is just a sample of what can be done by going after sales.

To maintain a large volume of sales to commercial or private buyers it is imperative that the factory be able to afford cheap and prompt repair and replacement service. We find that our national system of Alexander service stations, operated by 178 distributors and dealers, gives us a big advantage over smaller competitors.

Competition is now so keen that it is necessary that the manufacturer back up his distributor's work with continual advertising campaigns in general and aeronautical trade magazines.

Government Aids in Airport Development

By Harry H. Blee

Director of Aeronautic Development
United States Department of Commerce

AIRPORTS are the bottle-necks of commercial aviation. Upon them depends to a large extent the future of air commerce. Upon their adequacy depends the amount of aerial traffic that can flow through the highways of the sky.

The Federal Government, through the medium of the Aeronautics Branch of the Department of Commerce, is developing an extensive system of national airways over which commercial, military and private planes may operate with safety. This system of airways, which bids fair to become, in time, almost as comprehensive as our national highway system, is being provided with a number of extremely helpful aids to navigation. Powerful revolving searchlight beacons, with flashing course light projectors for indicating the direction of the airway, are being installed at 10-mile intervals along the roads of the sky. At 30-mile intervals, boundary lighted intermediate landing fields are being established and equipped, with caretakers available day and night.

Radio range beacons for guiding aircraft through storm or fog, radio marker beacons to tell the pilots their exact positions on the airways, the two-way radio telephone to make possible direct communication between aircraft and ground stations, all are being developed and installed on our principal airways; and special weather reports, covering conditions along the route, are being broadcast hourly. Air navigation charts, or strip maps, are also being prepared for the entire system of national airways. Moreover, present plans contemplate sectional navigational charts for the entire United States, and the Aeronautics Branch of the Department of Commerce is issuing maps and descriptive bulletins in loose-leaf form covering all of the airports and landing fields of the country.

All of these airways and navigational aids, however, would be of little value if there were no airports. Just as lighthouses and other aids to marine navigation would be of small value if there were no ports or harbors in which the ships could anchor and find shelter, and if there were no docks to which they could moor to load and unload their cargoes, so must airports be provided to link the airways together in order to make the system complete and effective.

To this end, many communities whose leaders have vision and initiative are establishing and equipping carefully designed, well located airports affording adequate facilities for the comfort and convenience of the public and for the safe and efficient day-and-night operation of aircraft, and in most cases careful provision is being made for expansion to meet the rapidly increasing need of aeronautics. Such communities will naturally be the ones to attract air commerce and its accompanying industries. Everyone who wants his community to draw its share of this commerce should seize every opportunity to boost the development of his local airport.

To obtain a place in the far-flung transportation system that is now taking shape in the skies, hundreds of cities and towns throughout the Nation are realizing that they must provide suitable airports; as a result, approximately 1,400 cities in the United States are today organizing committees and studying available sites—with more than a thousand additional cities actually engaged in the development of their airports.

Because airways must inevitably follow the flow of air traffic, one of the outstanding problems facing American communities is the provision of adequate airports. That is why the Aeronautics Branch of the Department of Commerce maintains a staff of airport specialists who travel all over the country, visiting cities desiring assistance in the selection of sites and furnishing information as to the requrements for the development of suitable airports. This service is available to municipalities, civic organizations and individuals, without charge upon request.

In order to aid the Nation's airport program, the Aeronautics Branch has organized a special Airport Section, the functions of which fall into three main groups: (1) The direction and coordination of the work of the department related to assisting in the selection of and fostering the development of airports; (2) the promulgation of airport rating regulations and the rating of airports; (3) planning and preparation of airport publications.

The work of this section includes conferences with

Airdrome at Houston, Texas. Photo by 22nd Photo Section, Army Air Corps

municipalities, chambers of commerce, and similar organizations desiring assistance in the selection of airport sites and requesting information regarding the requirements for the development of suitable airports. A small group of airport specialists is available for this work. These men are routed throughout the United States on carefully planned itineraries —the usual procedure calling for the inspection of a number of sites, perhaps a talk before a civic organization at noon or in the evening, and a conference or series of conferences with officials interested in the development of airports and desiring information regarding the requirements of airport rating regulations of the Department of Commerce.

These specialists urge the importance of having experienced engineers make comprehensive studies and prepare plans for complete airport development, in order that every dollar invested in the project may be expended to the best advantage. It should be understood, of course, that the Department of Commerce representatives do not render this engineering service.

Still another way in which the Federal Government is aiding the airport program is by rating airports upon application of the airport's owner.

During the past year much time has been devoted by the Airport Section to a study of the management aspects of airports and to a uniform system of field rules which will apply in whole or in part to airports all over the country.

As an example of the way in which the Department of Commerce is cooperating in this regard, two of the airport specialists of the Aeronautics Branch left Washington the first week in January on extended itineraries throughout the South for the purpose of assisting communities in the selection of airport sites. These specialists are conferring with various civic organizations and interpreting the requirements for the several airport ratings granted by the Department of Commerce. They are prepared to speak before public gatherings in the interest of airport development, although this phase of their work must necessarily be regarded as secondary to the more important selection of sites and rating interpretation.

One of these itineraries will cover the southern states west of the Mississippi, including Missouri, Arkansas, Louisiana, Oklahoma, Texas, New Mexico, and Arizona; and the other will cover the states east of the Mississippi River and will include Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, and Kentucky.

All southern cities desiring the assistance of the Government's airport specialists in the selection of airport sites or wishing information regarding the requirements for the development of suitable airports, should write at once to the Aeronautics Branch, Washington, for inclusion on these or future itineraries.

The Aeronautics Branch publishes a number of bulletins on the subject of airports, among which might be mentioned Airport Rating Regulations, Airport Management, Suggested City or County Aeronautics Ordinance and Uniform Field Rules for Airports, Air Traffic Rules, Air Marking, and Airports and Landing Fields. These publications are available without charge and the Department is glad to send copies to anyone who may be interested.

Curtiss Plant at Louisville

(*Continued from page* 22)

use of Continental men, with a special telephone line connecting. There are three trunk lines coming in for Curtiss use.

The lobby of the building is forty feet long and ten feet wide, while the waiting room is forty by thirty feet. Offices and schools are all twenty feet in width and varying lengths. Shop and stock rooms are also twenty feet wide. The walls of the building, that is the exterior surfaces, are of buff brick, starting from concrete foundations which extend about a foot above ground level.

In construction of the planned additional two hangars, it is proposed to space them 150 feet apart, with door openings on a line, and concrete the 50 foot stretches between the aprons at the opposing ends.

Two large tin barn type of hangars, the first on the field, and representing old Army hangars, still used by the army service, are to be taken down and moved back to the southwestern limits of the field,

News of the Southern AIRPORTS AND AIRWAYS

Kentucky Board Discusses Emergency Fields

THE Kentucky State Air Board, at a meeting in Frankfort, Jan. 15, discussed plans for emergency landing fields in the state; and legislation to control flying in the state, for the general safety of aviation and development of the industry.

A committee was named, composed of A. H. Bowman, Louisville, George D. Converse, Somerset, and C. Frank Dunn, Frankfort, to draft necessary legislation, to be introduced at the present session of the Kentucky General Assembly. The bill will ask for an appropriation for establishment of emergency landing fields over the state.

A bill was read that will, if enacted, create a state law, similar in many respects to the Federal regulations regarding pilots, and make it a misdemeanor for unlicensed pilots to carry passengers within the state, or violate any of the regulations incorporated in the bill as regards activities of pilots.

Cleared fields at strategic towns throughout the state, where no airports are valuable, are planned by the board.

About sixty air enthusiasts attended the meeting. The Air Board is composed of Messrs. Bowman, Converse and Dunn, Governor Sampson, as an ex-officio member; Carl Bernhardt, Louisville; and Adj. Gen. W. H. Jones, of Frankfort. The Air Board was formed a little more than a year ago.

Curtiss Airports are "Open" To the Industry

A recent pictorial map has been issued by Curtiss Airports Corporation which gives a picture of the scope and range of activity of this company in the airports industry. With 16 or more fields being built at strategic points throughout the United States and linking Canada and Mexico by airlines through their ports, the question has been often asked as to their availability to the public and their reason for existence, except as Curtiss ports.

In answer, Curtiss officials make the following statement: "Every one is an "open" airport and serves the public, private, commercial, and any person flying a plane or trying to learn how to fly. Commercial aviation is privileged to use Curtiss Airports facilities; their repair bases are open for the repair of any plane that needs attention. Mechanics are ready to serve the landing plane regardless of 'make, creed, or color' and this is a courteous, efficient, well trained group of men that have passed through a rigid school and training period.

"Hangars and storage space are ready for the sportsman business man and flier dropping in for a night, a week or a month. Supplies and spare parts with accessories are available at each one of the ports located at Valley Stream, Pittsburgh, St. Louis, Houston, Los Angeles San Francisco where San Mateo and Alameda are being whipped into shape Chicago, Milwaukee, Cleveland, Baltimore, Caldwell N. J., North Beach, N. Y. and Secaucus, N. J. and Louisville."

FORMAL dedication of the marine base of the Curtiss-Wright Flying Service at Miami, Fla., took place December 24. The opening marked the heaviest concentration of seaplanes in the United States, it is said. Included in the fleet were eight Sikorsky amphibians, six Loenings of the type used by the United States Marines, three Ireland amphibians, and Travel Air and Moth ships on pontoons.

Six new tri-motored planes have been purchased by the Southwest Air Fast Express, giving the company sixteen of the big air liners, according to Erle P. Halliburton, president. The deal represents an investment of over $300,000, and places the value of planes now owned by the line at $850,000.

Randolph Field Work To Be Rushed

AS A MEANS of expediting construction work at Randolph Field, near San Antonio, authority has been received from Washington by the constructing quartermaster to employ San Antonio architects to prepare plans and specifications for nearly 200 buildings.

The buildings include a group for which no plans and specifications have been prepared by the quartermaster general of the army, consisting of a hospital and school of aviation medicine, six field officers' quarters, 72 company officers' quarters, 90 bachelor officers' quarters, cadet barracks, post exchange, academic building and administration building.

Employment of San Antonio architects to draw plans for buildings at Randolph Field is for the purpose of hastening the work as fast as possible in compliance with the expressed desire of President Hoover.

It is expected that practically all architectural firms in San Antonio and perhaps in neighboring towns will be given a portion of the planning to be done, as a large amount of work exists and it is desired to accomplish it as rapidly as possible.

The amount of work to be done in connection with the group of buildings will represent a financial outlay aggregating $3,000,000, it was stated. San Antonio architects will work from preliminary sketches already approved by the chief of staff of the army.

At the present time actual construction work is progressing at the airdrome on six barracks to house 1,500 enlisted men, one Air Corps warehouse and one Quartermaster Corps warehouse. The barracks are expected to be completed by next November, and the two warehouses in two or three months.

About 12 miles of sewer system will be completed in two months, while practically the same amount of water system is already finished. Likewise, 16 miles of gravel roads are completed but they will be topped later with hard surface.

Recreational Activities at Beaumont Airport

PRIMARILY to furnish recreation for employes and students of the two aviation companies operating from the municipal airport at Beaumont, Texas, various recreational facilities have been introduced from time to time. A horseshoe court was the first of these and it is still a popular game, almost a year after its installation.

Ping pong was the next feature added. A regulation table was made up, hinged and set on trestle benches, so that it was portable and could be used indoors or out. This game proved exceedingly popular and has provided hour upon hour of exciting recreation. The casual thinker would judge ping pong as too tame for a pilot, but the game requires considerable skill and accuracy, is quite fast, and for limited spaces, proves equally as interesting as tennis.

A sand green miniature golf course is the latest addition. Various hazards are introduced and accurate putting is required. The novelty of such a course made it a hit instantly, commercial miniature courses have proven successful over the country, and it seems that interest will not lag on the airport layout.

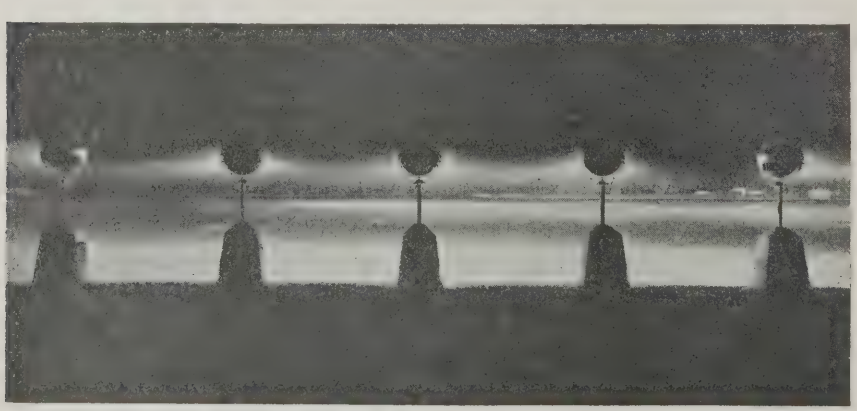
Beaumont has voted bonds for a larger airport, to obtain an "A-1-A," rating and 276 acres a few miles west of the present field have been acquired. On this field numerous recreational features are also proposed. It is planned to add checker tables, a croquet court and similar facilities.

The games mentioned are economical to provide and can be tucked into unused space without disadvantage. The present field is only 1275 feet by 1900 feet in size, and no space otherwise needed has been used to provide the game areas.

Airport officials state that visitors to the field have undoubtedly been increased due to the interest in the games, and they feel that part of their obligation to airplane and school operators is to assist in attracting people to the field. Plans for the new airport will include all of the games mentioned and many additional ones, it is stated. Volley ball, basketball, playground ball (indoor baseball outside), tennis, shuffle board, golf driving range and other sports which may be introduced in such a location, will be added. Likewise a playground area for small children, will be equipped with suitable facilities.

A reduction in passenger rates over the T. A. T.—Maddux Air Lines became effective January 14. The fares have been reduced from 12 to 5 cents a mile. The fares are effective between all points on which the T. A. T. planes stop on their cross-country trips. The rate between New York and Los Angeles has been reduced from $267.42 to $159.92.

Installation of lighting equipment at the Abilene Texas, air terminal, part of the improvements provided by a recent $100,000 airport bond issue, has been completed. The field is surrounded by green standard lights. Three 5,000-watt searchlights illuminate the runway; red lights mark the terminal building; the hangar is floodlighted from the ground and its corners, and is surmounted by a revolving beacon.



An Unusual Perspective—Back of the controls of a bank of five Crouse-Hinds DCE24 3,000-watt landing field floodlights recently installed at Fresno Airport, Fresno, Calif. The photograph shows clearly the intensity and uniformity of light which reach to the far corners of the field. The floodlights are the product of Crouse-Hinds Company, Syracuse, N. Y.

South American Air Mail Rates Reduced

EFFECTIVE January 1 a general reduction in air mail rates to Central America, South America and the West Indies became effective, the Post-office Department announces. The great importance and much increased volume of this mail is responsible for the change, which amounts to as much as 10c and 15c a half-ounce to some countries. Considering the growing economic relations between North and Latin America, these reductions are expected to have considerable bearing on the exchange of fast mail, with a resultant growth of trade, between the countries. Following is the new schedule of rates:

Argentine, 55c a half-ounce; Bahamas, 5c; Barbados, 20c; Bolivia, 40c; Chile, 50c; Colombia, 30c; Costa Rica, 20c; Cuba, 5c; Dominican Republic, 10c; Dutch West Indies—Curacao, Bonaire and Aruba, 30c; St. Martin, St. Eustatius and Saba, 20c—Ecuador 30c; Guadeloupe, 20c; Guatemala, 15c; Guianas (British, French and Dutch), 30c; Haiti, 10c; British and Republic of Honduras, 15c; Leeward Islands, 20c; United States and British Virgin Islands, 10c; Martinque, 20c; Nicaragua, 15c; Panama, 20c; Paraguay, 55c; Peru, 40c; El Salvador, 15c; Trinidad, 20c; Uruguay, 55c; Venezuela, 30c; Windward Islands, 20c.

These rates are the postage and air mail fee combined. Pan American Airways will extend its service to Brazil, creating a circuit of routes operated by this company completely around South America, it is stated.

Mason-Dixon Lines Completes Survey

The survey along the proposed Mason-Dixon Air Line from Detroit to Atlanta as to the possibility of air mail in the cities through which this line will go has been completed and a brief is now being compiled which will be presented to the post-office department with a request that the air mail line be established.

The proposed air mail line which will start at Detroit with scheduled mail stops at Toledo, Lima, Dayton, Middleton, and Cincinnati, Ohio, Lexington and Middlesboro, Ky., Knoxville, Tenn., and Atlanta, Ga., will run through the second largest populated section of the United States.

Abilene Air Terminal's Lighting System

COMMERCIAL aviation owes its present position as a means of transportation to the speed it has to offer. Curtail this speed by the elimination of night flying over long routes and the value of the airplane for transporting mail, express, freight or passengers depreciates greatly. Consequently, the Abilene, Texas, Air Terminal, in keeping with the rest of the field equipment, has an A-1-A Department of Commerce rated night lighting system and will step to the front as a prominent stop for the Government mail lines and the nation's transportation companies.

Following is a brief description of the various features in the lighting system:

The revolving searchlight beacon is mounted on a thirty-foot steel tower surmounting the roof of the hangar. This makes the light sixty feet from the ground. It revolves at the rate of six revolutions per minute and can be seen as far as 75 miles on clear nights. Its purpose is to guide pilots to the airport. In the top of the drum are two lenses which allow the light to spread out in a vertical fan. This is called the zenith light and can be seen through a thick fog when the pilot is directly over it.

The beacon uses a 30v. 1,000 watt lamp and burns from sun-down to sun-up every night. When one bulb burns out another flips automatically into place and begins burning. A red tell-tale lamp on the beacon burns when the spare is being used. The beacon throws a narrow beam of light at 1 1-2 degrees to the horizon and its normal rating is 10,000,000 candlepower.

A pilot about to land comes in over the beacon tower to which is attached a steel arm supporting an illuminated wind direction indicator sometimes called a wind cone. This gives him the direction of the surface winds and determines the direction in which he will land, which is always upwind.

Boundary lights are stationed around the entire field 30 feet from the fence line and 275 feet apart. These lights are frosted white weatherproof globes mounted on a two-inch pipe two feet above the ground. Besides marking the boundaries of the field they give the pilot some idea of his height above the ground, as he knows the standard distance between lights is 275 feet. Some of the boundary lights have green globes instead of frosted white, and this tells the pilot that the best approaches to the all-weather runways are over the green lights. The boundary lights operate on a six and six-tenths ampere series circuit and each receptacle contains a film cut out to complete the circuit in case a lamp burns out. There are 47 boundary lights in all. Each white light uses a 600 lumen lamp and the green lights burn 1,000 lumen lamps.

To flood the landing field itself, there are stationed three large landing floods, one on the east side, one on the north and one on the south. These are operated independently from the remote control panel in the manager's office in the Terminal Building. All field lights are so operated. The three floods will completely flood the landing portion of the field to an intensity that will allow the pilot to land as safely as in daytime. One flood is sufficient to make a safe landing. The flood shooting the direction the wind is blowing is turned on first so there is no chance of it shining in the pilot's eyes. Each flood burns a 5,000 watt, 110 volt lamp.

The hangar is completely illuminated, roof and sides to an intensity of two and a half foot candles. With the name "Abilene Air Terminal" painted in large letters on each side of the roof, there is no danger of the pilot not knowing his location. The hangar is flooded to protect it and also to give the pilot a more exact notion of his altitude. A total of twelve floodlights do this from positions on the beacon tower, roof corners and the ground, with a total wattage of 8,000.

All roof corners, tops of beacons, floods and telegraph poles are marked with red lights that will burn all night. There is a total of 45 ob-

Aerial view of the Abilene, Texas, airport. Modern lighting equipment and other facilities have made this port a cross-roads for several air lines.

stacle lights, each burning a 110 watt or 1,000 lumen lamp.

The ceiling projector, or height of cloud indicator, is a flood with a narrow piercing beam 3,000 feet long and is mounted on the hangar roof. This is pointed toward the sky at an angle of 45 degrees and the height of the clouds can be determined by the relative distance of a man from the flood to a point directly under the spot where the light hits the clouds. This flood burns a 1,000 watt 100v. lamp.

The system is controlled by a 2,300v. panelboard operated by relay from remote switches in the office of the field manager. The layout is one of the most complete and modern in the United States. It has already attracted visitors from neighboring cities and aeronautical authorities over the United States and is known from coast to coast. B. Russell Shaw and Company of St. Louis supervised the installation.

There are many other features which are not discussed in detail in this article. For instance, gasoline fueling pumps are electrically operated. The twelve-plane hangar has the only heating and cooling system in Texas, it is operated by a 2 h. p. motor. Electric drill press and grinder are included in the equipment. There are 34,000 square yards of runway paving. Utilities include a Postal Telegraph substation, gas, water, electricity, sewage and telephone. There is a complete weather bureau.

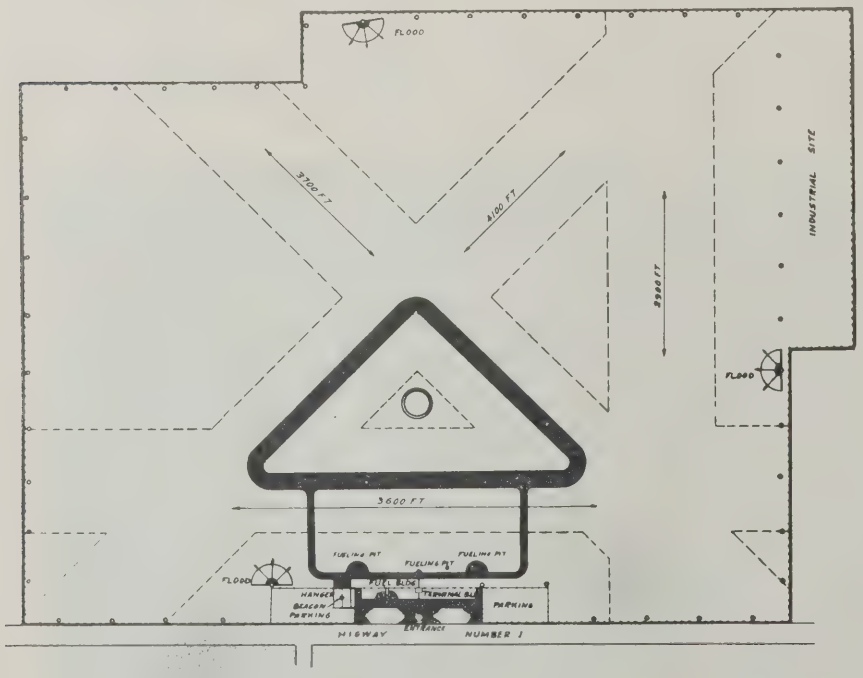
S. A. T. Lines operate from the port at present. Three more are expected within 1930. Abilene is on the proposed Government mail line between Los Angeles and Washington, D. C. The airport will have a hotel within the near future.

Airport Management and Uniform Field Rules

In an endeavor to assist those responsible for the management of the rapidly increasing number of airports throughout the United States and to bring about the general adoption of a standard code of airport field rules. the Aeronautics Branch of the Commerce Department has just published two bulletins:

Aeronautics Bulletin No 17, entitled "Airport Management." and Aeronautics Bulletin No. 20, entitled "Suggested City or County Aeronautics Ordinance and Uniform Field Rules for Airports," according to Harry H. Blee, Director of Aeronautic Development. Both of these printed bulletins are now available without charge, upon request.

A 3,000,000 candlepower Sperry revolving beacon has just been installed at the Jacksonville, Fla., municipal airport. The light has been placed on top of a 52-foot steel tower.



Above is the plan of the modern air terminal at Abilene, Texas, showing position of main building, terminal building and filling station. Floodlights are shown on three sides of the field. The port has an A-1-A rating.

Sites Being Considered for Norfolk Airport

WITH some quarter of a million dollars in cash already available for the establishment of a municipal airport and the expenditure approved by the city council, City Manager Truxton, of Norfolk, Va., is being swamped these days with public spirited citizens anxious to sell the city the site for the airport.

Mr. Truxton, who is recognized as one of the most efficient city managers in the country, has enlisted the assistance of a number of aviation experts, in making an airport survey. Officials of the T. A. T. have stated that, if need be, they will offer the services of no less an expert than Col. Charles A. Lindbergh.

On one thing the City Manager is firm, and that is that the Norfolk airport, which promises to be one of the most modern in the South, shall have facilities for the landing of both land and sea planes. The seaplane feature is especially important in that Norfolk is to be one of the ports of call of the New York-Rio-Buenos Aires Line.

More Improvements at Fort Worth Airport

Fort Worth, Texas, with $70,000 to the credit of its airport department, is about to build another $30,000 hangar unit, it was disclosed in January. Construction of an administration building costing $35,000 to $40,000 will follow, it is stated.

But that won't "break" the airport. Of the $500,000 bond issue voted for improvements of Fort Worth's air terminal, only $150,000 will have been spent when this balance is gone. Additional bonds will be sold to purchase the ground, now leased, which constitutes the field. The city's option is based on a price of $750 an acre for the 170-acre tract.

Another "border to border" airway is being planned for Mexico. This service is being arranged by the Inter Americas Aviation Transport Company, which recently obtained a concession to operate the old government conducted air mail line between Nuevo Laredo on the United States border, and Mexico City. The proposition is to have this line extend to Tapachula, state of Chiapas, on the Guatemala border. This company is also planning to inaugurate three local services, one of which will be between Monterrey, state of Nuevo Leon and San Antonio, Texas.

New Orleans to Panama Line is Proposed

CONSIDERABLE interest, aeronautically, no doubt will be evident in the announcement by Jack Leon Echols, veteran San Antonio, Texas, pilot, that he plas to establish a new airline from New Orleans to Panama on an 18-hour flying time schedule, and that he contemplates making a non-stop, nonrefueling flight soon over the exact itinerary of the proposed aerial route.

He expects to complete the jaunt within 12 hours, possibly within the "dawn to dusk" ratio attempted by Capt. Ira Eaker from Brownsville last year. Persons mentioned thus far as sponsors of the attempt are Clyde E. (Upside down) Pangborn, until recently vice-president and chief pilot for the New Standard Aircraft Co., of Paterson, N. J., and Emil Roth, Jr., former vice-president of the Empire Air Transport of Syracuse N. Y.

Itinerary of the flight would be from New Orleans due south over the Gulf of Mexico to Merida, Yucatan; thence to Belize, British Honduras; Tela and Tegucigalpa, Honduras; Managua, Nicaragua, and thence to Panama City, Panama.

In speaking of the proposed airline from New Orleans to Panama, Echols declared that two visits he recently made to New York City to confer with his backers had substantiated the belief that an early inauguration will be possible, one of which he hopes to be able to announce within six months.

Additional stimulus has been given the proposed undertaking by the interest shown recently by certain rail officials in effecting air-rail hookups with the project, Echols said. These connections can be effected to make possible through-direct service from New York or any point of the midwest on 72-hour service to or from Panama City.

Under the proposed flying time schedule it was ponited out that connection could be made at 11 a. m. at New Orleans with mail that left New York the previous night at 9:10 o'clock and that the Panama mail could be carried as far as Tela, Honduras, for the overnight stop. Panama then could be reached in the early afternoon of the second day, and within 40 hours after the mail left New York.

According to Echols, his route will be less than 700 miles over water—water which is free to a maximum extent from disturbances of violent winds—and serve much territory to the south. Coming north it aims as straight as an arrow to the second most important pulse of the nation's business—the great middle west and the south.

"Present indications are that our initial charter will be taken out in February—a closed corporation of $1.500,000—which would constitute the largest individual unmerged operator in the South," Echols said recently.

"This is a mere forerunner of the proposal of future expansion when the Armstrong sea landing bases are offered for sale. These bases have been given tests recently in the vicinity of Nw York and have proven highly satisfactory.

"With one of these bases placed centrally in the Gulf of Mexico it would make possible a connection service running laterally across the Gulf from Vera Cruz to Havana with the proposed line from New Orleans south, and would permit of tremendous expansion which I hope to take advantage of in the fullest measure in 1931."

The twin hull Savoia Marchetti flying boat, designated as the S-55, with a pay load capacity of 2,256 pounds, will be used for the over-water flight to insure the safety of this leg of the course and to provide passenger space over the section which will be patronized heaviest.

The flying boat is twin motored, using the Isotta Fraschini motor that develops 500 horsepower or a total of 1,000 horsepower. It has a top speed of 137 miles per hour, and 106 cruising. It has seating space for 14 passengers and crew of 3.

Lockheeds will be used on the balance of the trip to obtain the greater range of speed in bridging the 1,-800-mile gap. Echols said eight ships were listed by him as the total equipment necessary for opening the line, three of which would be in the water class and five for land.

The cost of the equipment will be $265,000, with the boats costing $55,000 each and the Lockheeds an average of $20,000 each. Full radio equipment and service will be inaugurated, Echols declared.

AIR MAIL service between Miami and Nassau, Bahama Islands, was started January 2 when 45 pounds of mail was carried from Miami to Nassau by the Pan-American Airways.

The Pan American Airways holds a year's contract with the Bahaman Government for air mail transportation. One round trip daily is made. Daily passenger service, which has been available for some time, will be continued through the winter.

Tennessee Mayors to Confer on Airport Problems

A meeting of mayors of towns and cities in Tennessee interested in establishing airports will be called soon, it has been announced by Larry Hughes, Memphis, newly appointed member of the State Aeronautics Commission.

The meeting will mark the first step toward establishing emergency fields over the state.

Steps will be taken to have every village in the state plainly marked with its name, and if it has a landing field an arrow indicating its directon, Mr. Hughes says.

The Aeronautics Commission was authorized by the extraordinary session of the legislature in December. It will assist municipalities in surveying sites and establishing airports and emergency landing fields.

Delta Air Service Reduces Fares

A drastic cut in its passenger fares amounting to approximately fifty per cent was announced recently by Delta Air Service, Inc., Monroe, Louisiana, which operates regular airplane passenger and express service between Dallas, Shreveport, Monroe, Jackson, Meridian, Tuscaloosa, and Birmingham. New and greatly improved schedules were announced at the same time.

Particular examples of the cut in fares effected by Delta Air Service are: between Monroe and Dallas, a reduction from $34.00 to $20.25 one way; between Monroe and Jackson, from $13.25 to $8.25 one way, and from $21.50 to $14.31 for the round trip; between Dallas and Birmingham from $74.75 to $46.00 one way, and from $140.00 to $78.86 for the round trip.

Air passenger service between Abilene and San Angelo, Texas, was inaugurated the first week in January by Cromwell Airlines. The company now operates lines between San-Angelo and Dallas, and San Angelo and San Antonio in addition to the newly inaugurated San Angelo-Abilene line.

Midland Gets Army Airway Station

THE Midland Airport at Midland, Texas, has been designated an Army Airway Station by the Air Corps. Ground was broken December 26 for a government building to house the army radio and meteorological equipment and the operating personnel, which will consist of five enlisted men in charge of a sergeant.

A large Army hangar will be erected to accommodate the government planes passing through from coast to coast and making Midland an overnight stop. As soon as the meteorological instruments are installed, complete weather data, including the upper air currents, will be available to all pilots landing there.

Due to its being located half-way between Fort Worth and El Paso, Midland has become a popular stop for both commercial and government planes using the southern transcontinental route. Excellent facilities are offered, including one of the largest and smoothest fields in the southwest, specification fuel electrically pumped, licensed mechanic, prompt and efficient service, storage facilities and free transportation to and from town.

Upon completion of the building program, which will probably be in March or April, complete lighting equipment will be installed and the Midland Airport will then take its place among the most modern and best in the country.

Glider Has Been Ordered by Interstate Lines

Announcement has been made by officials of interstate Airlines, Inc., at Sky Harbor, near Nashville, Tenn., that a two-place training glider being constructed for the company by Carl Duede of Stuart, Ia., will be ready for "test hops" at the airport some time this spring.

The glider has a wingspread of 34 feet, and is to be used at Sky Harbor for training students and for exhibition flying. It can be launched either by a shock cord or towed by an automobile, he said. Its builder was an instructor during the World War, and carried the first air mail in the state of Iowa.

Locations near Nashville, with a variety of hills and valleys, offer unusual opportunity for flying the silent air vehicles. For this reason, Interstate is having the glider sent here for its first flights, before taking it to other airports along the Interstate lines.

TWO Interstate Airlines pilots, flying the mail between Atlanta, Ga., and Chicago, established a new record for the mail January 6, when Pilot Lawrence Jamieson flew from Atlanta to Evansville, Ind., a distance of 359 miles in 2 hours and 20 minutes, and Pilot Joe Hammer finished the last lap of the route between Evansville and Chicago in one hour and 32 minutes. Hammer's speed averaged 172 miles an hour, and an average of 161 miles an hour was maintained for the entire trip of 623 miles.

Tyler, Texas, to Have Modern Airport

The Tyler Municipal Airport is now under construction and, when completed, will be one of the most modern airports in East Texas. Comprising 293 acres of upland, ideally located, and with no obstruction, the port will serve as a stopping point for all aviators desiring to fly between Shreveport and Dallas—Tyler being at the midway point, 100 miles, bf air, from each city.

The new airport is located 5 1-2 miles west of the city on the Dixie Highway and has regular bus service available.

At the present time, a hangar 100 by 110 feet in size is being constructed with runways approximately 300 feet in length. Night flying equipment will be added as soon as the usage will demand.

The field, when completed, will represent an expenditure of approximately $75,000.

The Southern Air Transport Company, the Delta Air Lines and other companies are planning regular schedules to and from Tyler as soon as the port is open for regular service, which will be about March 15, it is stated. O. C. Palmer is Manager of the port.

An inspection of airport sites in the territory around Sheffield, Tuscumbia, and Muscle Shoals, Ala., has been made by William J. McKenzie, of the Aeronautic Division of the Department of Commerce, Washington, Congressman Ed. B. Almon, and the local Tri-Cities' airport committee sponsored by the Kiwanis clubs. Mr. McKenzie expressed himself as "favorably impressed with several sites here" but declined to make known the nature of his report.

Transcontinental Fares Are Substantially Reduced

A substantial reduction in passenger rates over the middle-western division of the southern transcontinental air-rail route became effective January 1, introducing the cheapest transcontinental air-rail passenger rates in the country, according to Jack Frye, president of Standard Airlines, Inc., which forms the western link of this route.

A 50% reduction in passenger fares which was made over the Southwest Air Fast Express division between Sweetwater and St. Louis on that date lowered the rates between these points to $38.50 and placed them on a basis of five cents a mile over this 750-mile division.

The entire transcontinental passenger rate was reduced considerably as a result of this substantial reduction over the Southwest Air Fast Express. The cross-continent passenger fare over the southern route was reduced to $181.37.

Baltimore to Havana Line for East Coast Co.

Large 17-place flying boats, known as the Savoia Marchetti S-55, designed to accommodate 14 passengers, two pilots and a mechanic or radio operator, will be use on the air line to be inaugurated between Baltimore, Md., and the South by the recently formed East Coast Airways, Inc., according to Alfred W. Gieske, Jr., president on the line.

The first leg of the service will be inaugurated between Baltimore, and Norfolk, Va., which will be opened on or about April 1, 1930, it is stated, with the remainder of the line probably to be in operation by the fall of 1930. The proposed line will extend through Norfolk to Jacksonville, Miami and Havana. Daily service is the tentative goal of the company.

NEW AIRPORT DEVELOPMENTS

Tuscumbia, Ala.—Several sites are being considered for the establishment of a municipal airport.

Greenville, Ala.—A landing field was opened at Greenville the latter part of January. The field was made possible through efforts of the Greenville Lion's Club.

Andalusia, Ala.—A 200-acre tract two miles south of this city is being conditioned for an airport. Dixon Brothers are in charge of the construction work.

Dania, Fla.—J. B. Fornin, chairman of the Aviation Committee, announces that an airport will be established here.

Jacksonville, Fla.—Thomas C. Imeson, City Commissioner, is urging the expenditure of $25,000 for further improvements at the municipal airport here. This sum still remains to be used, being a part of the original $100,000 airport bond issue.

Raiford, Fla.—A landing field will be established here. The field was secured through efforts of Dr. Ralph N. Green, representative of the United States Department of Commerce.

Tampa, Fla.—A complete lighting system is to be installed at Drew Field. County commissioner J. N. Holmes and Captain A. B. McMullen are in charge of the work.

Titusville, Fla.—A lighting system is being installed at the local airport. The system is expected to be in operation in a few weeks.

Lake Worth, Fla.—An airport for accomodation of land and sea planes will soon be built here.

Palm Beach, Fla.—About $75,000 will be spent for improvements here for the Curtiss Wright Flying Service.

Winter Haven, Fla.—A fund of approximately $3,000 has been raised for conditioning the Winter Haven municipal airport. Improvements contemplated include two buildings to be used as headquarters and a flying school.

Valdosta, Ga.—Work has started on Valdosta's municipal airport. The field is three miles southwest of the city and when finished will provide three runways of more than 3,000 feet.

Wichita, Kan.—A new administration building to cost approximately $200,000 will be erected at the municipal airport.

Winfield-Arkansas City, Kans.—A ninety-day option has been taken on a 160-acre tract for a municipal airport to serve Winfield and Arkansas City, Kansas.

Louisville, Ky.—The Curtiss Flying Service is planning to build a lean-to addition to its local hangar.

Middlesboro, Ky.—Business men of the coal towns of Middlesboro and Harlan recently met for the purpose of discussing the selection of an airport site, with a view to securing air mail facilities for these towns.

Gulfport, Miss.—Zach Bailey, contractor, has started construction on a new hangar at the Gulfport municipal flying field. Concrete floor and increased electrical equipment have been added to the original builder's estimate.

Biloxi, Miss.—Wrok has been started on the municipal airport here. The aviation committee of the Chamber of Commerce is directing the work.

Yazoo, Miss.—Citizens of Yazoo have signified their desire to have a municipal airport by signing a petition addressed to the mayor and city officials, urging the selection of a site immediately.

Ardmore, Okla.—An airport committee from Ardmore has returned from an inspection of various airports in the state for the purpose of gathering information to be applied in selecting a site for a municipal airport for Ardmore.

Blackwell, Okla.—A new hangar will be built at the local airport when conditioning and marking are completed.

Tulsa, Okla.—A $50,000 hangar will be built at Everett Taylor Airport here.

Greenville, S. C.—Grading, enlarging, lighting, and draining constitute the improvements for 1930 at the local airport. Government experts are to advise the commission on the improvement program.

Knoxville, Tenn.—Contract has been let for grading on Bearden Field. Grading and other improvements at this field will cost approximately $40,000.

Memphis, Tenn.—Contract for installation of a lighting system at the municipal airport to cost approximately $16,480 will be let soon.

Abilene, Tex.—A new concrete hangar and lighting system has been installed at Kinsolving Airport here. Permit has been issued the Magnolia Petroleum Company to erect a $9,000 filling station at the municipal airport.

Amarillo, Texas—A $50,000 brick and steel hangar and administration building has been installed at English Field.

Beaumont, Texas.—About $100,- will be spent for improvements at the local airport. A lighting system, a draining system, and a new hangar will be among the improvements.

Bonham, Tex.—Contract for the erection of a 60-by-80 foot hangar at the municipal airport has been let to L. K. Crawford.

Brady, Tex.—A 135-acre tract on Highway Number 9 has been purchased for the development of a municipal airport.

Dalhart, Tex.—A 640-acre tract has been chosen by the Dallam County Commissioners for a municipal airport for Dalhart. Bids on the lease for operating the airport were opened February 11. Judge Floyd McNeal was appointed to receive all bids and proposals.

Del Rio, Tex.—A municipal airport comprising 126 acres and costing $68,000 will be constructed here.

Fort Worth, Tex.—The $18,000 concrete apron at the municipal airport has been completed and is in use. It is 100 feet wide, and extends the entire length of the existing hangars at the airport. It was built to provide space for loading and unloading passengers and the servicing of planes in front of the hangars.

Goose Creek, Tex.—A 280-acre airport is to be established here.

Greenville, Tex. — A site three miles from the business center of Greenville, has been selected for a municipal airport.

Houston, Tex.—Work has commenced on the first airplane hangar to be erected on the $2,000,000 Houston Curtiss airport, located on the Main Street road. Don Hall Construction Company has the contract for the building.

San Marcos, Tex.—A government emergency landing field will be established here. San Marcos is on the Brownsville-Fort Worth route.

Texarkana, Tex.—Hangars and lighting fixtures to cost about $50,000 will be installed at the local airport soon.

Beckenridge, Tex.—A privately owned airport adjoining the city will be taken over by the city for development into a municipal airport.

Clarendon, Va.—Washington Airports, Inc., will erect a new administration building and two hangars on its property near the Arlington Memorial Bridge.

Langley Field, Va. — Improvements costing $1,835,150 will be installed at Langley Field. Improvements will consist of new buildings mostly.

Danville, Va.—An appropriation of $20,000 has been made for the construction of hangars and shops at the local airport. The ariport is leased to the Lynchburg Flying Service, Lynchburg, Va.

Newport News, Va.—Efforts to secure an airport here have been renewed.

Charleston, W. Va.—Wertz Field municipal airport, is expected to be opened for operation by June 1.

A 35,000,000 candlepower beacon is to be installed in Buenos Aires on the roof of the new South American branch building of the National City Bank of New York. This is the first beacon to be erected of this class in South America, it is said, and on a clear night will be visible for 100 miles.

Aeronautical Personalities

Texas N. A. A. Governor Has Impressive Record

EQUALLY important in their scope of endeavor, though perhaps less sensational than the intrepid pilots who perform epochal feats and win deserved fame and glory, are the forces constituting the powerful factors behind the present-day advancement of aviation in the United States.

Among these latter partisans of the aeronautical cause may rightfully be included John W. (Jack) Beretta of San Antonio, Texas, who, although only 30 years old, is National Aeronautic Association governor for the State of Texas with an impressive record of earnest effort behind him.

Beretta is serving his second term as N. A. A. governor, having been elected to fill an unexpired term last year. In May, 1928, he organized the San Antonio chapter of the National Aeronautic Association and was elected its first president.

His first actual contact with aviation came in 1916 when he took his initial flight in a plane piloted by Marjorie Stinson, sister of the famous Eddie Stinson, at Stison Field in San Antonio, which is now known as Winburn Field, the municipal airport.

In 1923 Beretta graduated in structural engineering at the Massachusetts Institute of Technology. He had formerly attended the University of Texas.

Following his graduation at "Tech," Beretta was employed for six years with the American Bridge Company as resident engineer for steel erection of the Philadlphia-Camden suspension bridge, the longest suspension bridge in the world at that time.

He also was assistant engineer in the New York office of the same company for two years and while thus engaged managed to find time to take flying lessons at the old Curtiss Field, Mineola, Long Island. From that contact with flying he became interested in the designing of modern airports.

At the present time he is president and organizer of the Beretta-Stiles Company, Inc., consulting engineers, and as such is Texas representative of the Aero Engineering and Advisory Service, Inc., of New York.

Beretta is a member of the aviation committees of the San Antonio Chamber of Commerce and San Antonio Junior Chamber of Commerce, and a member of the mayor's advisory committee on the municipal airport.

Last year he served as directing official for the Reg Robbins-Jim

John W. (Jack) Beretta

Kelly endurance flight at Fort Worth, Glenn Loomis-Joe Glass endurance flight, Houston; world's record non-stop flight for light planes by Barney Zimmerly, Brownsville, Texas, to Winipeg, Canada; San Antonio leg of the "On to Tulsa Air Derby," sponsored by Tulsa petroleum interests; San Antonio control of the Mexico-Kansas City air derby sponsored by reserve officers committee; San Antonio-St. Louis air derby, and for the 1928 visit of the National Air Tour in San Antonio.

Baretta has been invited to represent Texas at the ring laying of the new naval ZRS4 at Akron, Ohio. He holds private pilot's license No. 8,573, U. S. Department of Commerce.

Miss Claire Holloway of Granite City, Ill., is the first woman to be enrolled for a flying course in Parks Air College since the ban against women students was removed January 1st.

Tex Rankin Sets Outside Loop Record

WHILE the Department of Commerce frowns on "stunt" flying in private pilots, much of the progress and improvement in the design of airplanes comes as a result of spectacular and sometimes breath-taking trials of new evolutions.

On January 7, Tex Rankin, a noted pilot, set a new world's record for outside loops, flying a stock model of the Great Lakes Aircraft sport-training plane. Until Mr. Rankin made this flight the world's record was thirteen continuous outside loops. Mr. Rankin in establishing this new record completed 34 continuous outside loops. The committee of the National Aeronautical Association which witnessed the test in an official capacity, gave him credit for 19 perfect and continuous loops which will stand as the new record. The remaining 15 loops were not officially recognized, due to the fact that from the 20th loop on, the plane did not continue in a straight line from the starting point.

This is the second interesting record which Tex Rankin has established during the past year. Last summer, again flying a Great Lakes sport-training plane, he flew from Canada to Mexico on a non-stop flight. He flew the distance from Vancouver, British Columbia, to Agua Caliente, Mexico, 1,350 miles, in thirteen hours and seven minutes at a cost, for fuel, of $22.50.

The Great Lakes sport-training plane which was used in establishing both of these records is a Cleveland-made product, being built by the Great Lakes Aircraft Corporation.

Art Wintheiser, one of the test pilots of the American Eagle Aircraft Corporation, recently returned to the company's factory from Mexico City with a large silver loving cup which he won in the free-for-all race there in the International Aviation Meet December 16. Wintheiser, piloting an American Eagle Phaeton powered with a Wright Whirlwind seven motor, defeated seven other pilots, five of whom were flying American built planes.

Musleh's Stunting Still Draws the Crowds

STUNTING in his Waco-9 is Joseph Musleh's chief delight. When he gets into the air he can not resist a roll, a loop or some other stunt. He is like a boy out from school and he must let off his youthful exuberance.

Though he has been flying little more than two years, Musleh has made much progress in the art of

Joseph Musleh

flying. Recently at the dedication of Mabry Field at Tallahassee, he was sent for by Governor Doyle Carlton who wished to congratulate him upon his aerial performances. He had been staging a one-man stunt performance during which he flew his Waco-9 upside down for quite some distance.

Musleh has done many hours of cross country flying and has been a participant in air meets through the State, winning numerous prizes for stunting and racing. Each Sunday he entertains crowds at the Jacksonville municipal airport with his aerial antics and during the summer keeps beach visitors spell-bound with his performances.

When he had had little more than 10 hours of solo flying this daring pilot made a cross-state flight. He took off for Daytona Beach. Arriving there he refueled and started back to Jacksonville. Darkness overtook him and for several hours he circled about without being able to locate himself. Finally flying low he recognized Fernandina.

Here he effected a landing in a pasture without damage to either the ship or himself. He then walked to a house nearby and found that its occupant had taken a boat and gone out to endeavor to locate the pilot of a plane he thought had fallen into the ocean.

Musleh explained that he was the pilot and that his plane was safe in the pasture to the rear of the house. The next day mules hauled the plane out of the field and he flew back to Jacksonville.

Musleh began his flying activities in July, 1927, and made his solo flight on Christmas day of that same year.

Johns Flies "Grocery Sample Case"

Vernon Johns, who used to fly for an oil company out of Fort Worth, "flew the groceries" there the other day. And that's not a witticism, either.

The ship that Johns recently set down in Fort Worth, on his way to Los Angeles, carries the famous 57 varieties, plus a couple of hundred even, as the flying sample case of Reid, Murdoch and Company of Chicago, wholesale grocers. This ship has shelves, especially designed so that canned and bottled goods will not fall out when a ship banks or otherwise departs from horizontal.

George A. Wise, Inc., Roosevelt Field, New York, has been appointed eastern distributor for the Verville Aircraft Company, according to an announcement by Alfred V. Verville, president of the company.

Wise has been in the airplane distributing business since 1925, and is well qualified for this position. At present his line includes the Stearman, Aeromarine Klemm, and the boat and land plane of the Viking Flying Boat company of New Haven, Conn. He has two sales and demonstration hangars on Roosevelt Field.

Lieut. Doolittle Joins Shell Corporation

LIEUT. JAMES H. DOOLITTLE, famous Army flier, has joined the Shell Petroleum Corporation, as director of aviation. His headquarters will be in St. Louis.

The appointment of Lieut. Doolittle to direct its aviation activities is the first step in an aggressive aviation expansion program already planned and partly under way by the Shell company, its officials state. The program forecasts the early purchase of a number of additional planes with which to adequately cover the 28 states in which Shell aviation products will be demonstrated by this new-day method, it is announced. Under the air expansion program, Shell officials will have available the most modern facilities of efficient, time-saving transportation and in addition will have in Lieut. Doolittle an expert with an enviable record as an army flier as associate and consultant in all things pertaining to aviation.

Lieut. Doolittle's achievements in flying are many. He was recently loaned by the U. S. Army Air Force to the Guggenheim Foundation for the promotion of aeronautics and he has conducted exhaustive tests including blind flying under conditions simulating the densest possible fog. Lieut. Doolittle, the first North American to fly over the Andes Mountains in South America, is also credited with being the first man to make an out-side loop, considered the most difficult of all aerial maneuvers.

Lieutenant James Doolittle as he arrived in St. Louis to assume his duties as Director of Aviation for the Shell Petroleum Company. In the picture left to right are: Milt Girton, Lieut. Doolittle, Phil Love and Victor J. Azbe.

Rice Does Big Things in a Big Way

GEORGE K. RICE, pilot on the Los Angeles-Kansas City route of the Western Air Express is the sort of fellow that would make a hero for one of Peter B. Kyne's stories of the Redwoods.

Rice was born and grew up in the shadows of the giant redwoods near

George K. Rice

Redwood City, California, and like a true Kyne hero he does big things in a big way.

A. W. Bieber was only co-pilot of the tri-motored Fokker monoplane of Western Air Express in which Rice discovered the ill-fated City of San Francisco last September on the barren slopes of Mount Taylor—

But, when the $10,000 reward money was paid Rice by T.A.T. and the parents of C. F. Canfield, Co-pilot Bieber received a third of the reward. Unselfishly, Pilot Rice divided the money with his co-pilot and the steward of the ship, Chris Johnson.

Rice started flying with the United States army in 1917, at Kelly, Selfridge and Ellington fields. During the war he served in the capacity of instructor and many of his pupils made big names for themselves in action above the World War front. After hostilities had ceased Rice was assigned to the border patrol and flew along the Rio Grande in search of marauding Mexican bandits.

After his discharge from the army Rice piloted a number of private ships and gained much valuable cross country experience that has proved invaluable in piloting Western Air Express planes over the 1420 mile "Dawn-to-Dusk" between Los Angeles and Kansas City. Rice was given the responsible assignment by Western Air Express officials to pilot the first passenger ship over the difficult run which was opened June 1.

Rice is the son of T. C. Rice, county recorder of San Mateo county. He has been flying for Western Air Express since July, 1928.

Barron Quits Barnstorming to Become Instructor

Pat Barron, is old enough, as fliers go, to be classed as an old-timer. He began his flying career in 1925 under Captain V. C. Omlie. Five years is not such a long period in life's span, but is a far cry from the old jennies and Standards in which he learned to fly to the present airliners and sport planes, says Pat.

Captain Omlie under whom he took his instruction at Wellington, Tenn., thought enough of his flying ability to give him a job, but when he had accumulated enough cash he bought an OX powered Standard and soared away to barnstorm the Tri-states for many months.

Barnstorming finally lost its ap-

Pat Barron

peal and its cash customers became scarce when the airplane became common, so Pat returned to Memphis, where he is an instructor with the Tri-States Aviation Company.

Hurst Helps Birmingham Become Airminded

THE problem of making Alabama air-minded has been tackled squarely by the Birmingham News and Age-Herald, who in addition to establishing an aviation column to carry the weekly aviation chatter of the two Birmingham flying fields, has sent Ralph Hurst, by

Ralph Hurst

plane, to cover every large aviation event.

To create interest in air mail, Hurst flew 4,000 miles in six days and wrote daily front page features on his experiences in flying the mail. The Alabama flood found Hurst writing his experiences from the air, as an observer with the One Hundred and Sixth Observation squadron, of which he is a member, having enrolled to become a pilot.

When the Birmingham News decided to sponsor the Alabama State Air Tour, Hurst was assigned with the pathfinding ship to map the route. The Birmingham News entered the Cleveland Air Races and Hurst accompanied the entry plane. Hurst is a native of Thomasville, Georgia, and is a widely known newspaper man, having served with the Associated Press. Since he has been in Birmingham he has become one of the most active aviation sponsors in the city and has assisted in the organization of the Birmingham chapter of the National Aeronautic Association.

C. Gilbert Peterson, who for a number of years has been prominently identified with both the engineering and sales phases of the airplane industry in the United States, has joined the sales organization of the Airplane Division of the Ford Motor Company, in the capacity of sales engineer.

Interstate Head Enjoys Unique Distinction

OF ALL the accomplishments of American aviators in the late war, Colonel W. G. Schauffler, vice-president and general manager of Interstate Airlines, claims an honor that can belong to only one man—that of being the first American pilot to fly a fighting plane across the enemy lines.

This particular flight could not be said to be in line of duty, since all American fliers had been warned that they would be court martialed if they were caught behind the enemy lines before a certain date, and since aviators were not supposed to get lost even in those days, the Colonel is at a loss to explain just how he happened to win this distinction. Upon his return to the American airdrome with his bullet ridden plane, he was immediately signalled out by his fellow fliers to receive the cast-iron landing boots, etc.

It was in the spring of 1918. The cause of the trip, which resulted in the baptism of fire for the American air forces in France, was merely to test a camera.

As the pilot and his observer set out on their mission, the plane climbed to a high altitude. After a brief examination of the lay of the land, the observer signalled the pilot that the pictures they had set out to get were immediately below, and the ship dropped to an altitude of 5,000 feet, flying in a direct line back toward the airdrome.

Suddenly strange black clouds began to appear near the plane. There was a puff here, another one there. The Colonel could not figure out how small black clouds could appear as if from nowhere. The day was clear and the plane was far below the ceiling.

The small clouds increased, and then one broke fairly near the plane. The explosion rocked the little Spad.

Anti-aircraft fire! But what could be the idea, the Colonel wondered, they were over their own territory. Those Frenchmen must have a queer idea of a joke, he thought.

The Colonel nosed his ship down still more to show his friends on the ground who he was.

As the plane was rapidly losing altitude a fragment of one of the shells tore a hole in one of the wings. That was too close for comfort, and he nosed the plane down at a faster rate. He'd show these gunners that he couldn't be fooled, thought he, but at the same time he wondered why the firing should continue. He didn't know that the smoke of French and American

Col. W. G. Schauffler

"anti" shells was white and that of the German shells black.

Another experience new to the master of the plane. But it was not long before he realized that the "French" below were turning their machine guns upon him.

"Damned accurate marksmen those 'frogs' must be if they can use machine gun fire for a joke," he thought. The tracer bullets by this time had torn more holes in the ship's wings and body.

Flying low, not more than 100 feet up, the plane sped in the same course it had been following. German soldiers and officers came from under cover and fired at the American plane with pistols and rifles.

Realization of the danger he had been in gripped the pilot of the little Spad, and the question "Can we get away?" struck fear to his heart.

He pointed the plane southward, finally getting out of the enemy territory, and continuing southward for nearly an hour and a half. Finally he passed over a railroad track familiar to him, and, following it, arrived safely at his base despite his bullet riddled ship.

Such is the story told by Colonel Schauffler of his initiation into air fighting. "It was just a mistake that this distinction came to me," says Colonel Schauffler, "I never have been able to figure out just why or how I got into enemy territory."

During his service in France with the A. E. F., the present head of the Interstate lines was awarded the Croix de Guerre, high French military award for bravery and courageousness in action. He also holds three citations for bravery from the American Expeditionary force, and has been recommended for the Distinguished Service Cross.

After the war Colonel Schauffler was in charge of the Mexican border patrol until 1921, when he resigned to devote his time to private interests.

But the Colonel has not always been an aviator. He's done most everything there is to do. Once he was a newspaper man. He spent some time on the Boston American, and several other papers in various parts of the country.

At one time in his life, Colonel Schauffler laughingly states, he could speak better Arabic than he could English. He was born in Beriut, Syria, while his father was in charge of the medical department of the American Missionary College there. He came to the United States for the first time when he was about four years old.

Since being mustered out of the army, Col. Schauffler has for much of the time been a real estate dealer in Washington, D. C. He became general manager of the Interstate Airlines, Inc., February 1 this year, and recently was made vice-president. The call of the air was too much for him to withstand, hence his connection with the holders of the Chicago-Atlanta air mail contract.

"The thing I miss most in being out of the army," the head of the Interstate Airlines here says, "is polo. It's the next best thing to a dog fight in the air that I know of."

Paul Goedert, former instructor in the Arrow Flying School at Arrow Airport, Inc., is the first graduate of the Arrow company's newly inaugurated school for airport managers and school instructors. He has gone to Kearney, Nebr., to take charge of the recently incorporated Kearney-Arrow Flying Service, Inc.

Alaskan Priest to Use Plane in His Work

A PRIEST, accustomed to traveling weeks at a time by dog sled to visit the scattered families of his Alaskan parishes, will in the future cover the same territory in a few hours by airplane.

The Rev. Father George H. Woodley, a Jesuit stationed in the diocese

Father Woodley (left) and Arthur Woodley

of Bishop Crimont at Anchorage, Alaska, is the first flying priest of North America. He is in charge of four parishes and for many of the families he is their only contact with the outside world, a bearer of supplies in bad weather and of medicines when his people are ill.

Father Woodley, in carrying out his duties, has spent most of his time behind the dog team, riding in all sorts of weather over snow-covered land. In good weather it has taken him three weeks to visit the four parishes, often a week of continuous riding to go from one parish to another.

He was reared in Quincy, Mass. On a leave of absence last fall he returned to his home to find that his brother, Arthur Woodley, had become interested in flying and had been graduated from Kelly Field. The two brothers talked about the advantage of using a plane in Alaska and Father Woodley, decided to become a pilot. Shortly afterwards, he purchased from the Colonial Flying Service a Fleet training plane and now is receiving daily instruction from his brother. By spring he hopes to obtain his transport pilot's license and when he returns to Alaska he will take with him two Fairchild cabin planes.

"I have seen cases," Father Woodley says, "where men and women died and families were at the point of starvation because they were unable to get in contact with the outside world. In case of serious illness it often takes a week or ten days for word to reach us in Anchorage and another week to go to the patient. By the time I arrived it was too late. With a plane I will be able to carry the sick to hospitals in two or three hours where they can receive proper medical attention and care.

"In still other cases, where the patients are isolated, I will be able to fly to them with spiritual consolation at times when it is most needed.

"The needs for airplane travel in my work are great. By means of plane I not only hope for greater efficiency in my religious work but also to be able to bring help and assistance to many who would otherwise perish during the winter months."

Father Woodley is receiving his training at the Boston Municipal Airport. He will remain there until May when he leaves for the West Coast to sail for Alaska.

Vera Walker is World's Smallest Pilot

Miss Vera Dawn Walker, smallest pilot in the world, successfully completed all written and flying examinations at the Aero Corporation of California recently and became the eleventh woman in the United States to win the coveted Department of Commerce transport license.

Miss Walker learned to fly at the Standard Flying School and upon completion of her course this spring

Vera Walker

entered the woman's air derby and was the only Los Angeles woman to finish the race.

J. A. Benoit, formerly works manager of the Parks Aircraft Division of Detroit Aircraft Corporation, has been made manager of a new Parks Air College office in New York.

Lawyer-Aviator Finds Time to Promote Aviation

Greek P. Rice finds time from his law practice to put in a few hours in the air each week, and to lend his aid in promoting airports in central Mississippi.

Rice is a veteran civilian flyer, having taken his instruction under Earle Hughes and Pat Barron of the Tri-State Aviation Company, Memphis, and of Lee McBride, of the Curtiss Flying Service, several years before his section of the state ap-

Greek P. Rice

proached its present state of air-mindedness.

He was instrumental in promoting and establishing the present excellent airport at Clarksdale, his home town, and has been active in establishing other ports in central Mississippi.

Many Occupations Represented Among Women Students

A checkup of the 54 women students who have registered for ground school courses at the Curtiss-Wright Flying Service ground school in New York City, since the courses for women were inaugurated on September 16, reveals a wide variety in the sort of thing they spend their time doing when they are not learning about how and why airplanes fly. Eighteen different occupations are represented among them.

There are artists and lawyers, telegraph operators and advertising copy writers. There are two airplane saleswomen, three students and twenty secretaries. There are two housewives, a dramatics teacher, a department store worker, an accountant, a librarian, and a teacher of physical education. There is a waitress, who, incidentally, is also taking flying instruction and will be ready to solo within a short time. She gets off at three o'clock from the restaurant where she works and then goes out to the field for her flying lessons. Twice a week, in the evening, she attends ground school.

General News of THE AVIATION INDUSTRY

Federal Accident Report Shows Increased Safety

A MARKED increase in the number of miles flown for each accident in civil aeronautics in the United States for the first six months of 1929 over the same period in the previous year is shown in the semi-annual report of aircraft accidents made public by Clarence M. Young, Assistant Secretary of Commerce for Aeronautics.

A total of 56,201,338 miles was flown by civil aircraft in the United States between January and June, 1929—more than three times as much as during the first six months of 1928—in air transport and miscellaneous operations. Air transport operations, it was stated, includes those in which aircraft carry passengers, mail or express on scheduled service over regularly established routes, and miscellaneous operations include student instruction, experimental, commercial and pleasure flying.

In scheduled air transport operations for this period, the report shows there were 9,201,338 miles flown with nine fatal accidents reported, the mileage flown for each fatal accident therefore being 1,022,371. For the same period of 1928 there were 4,484,612 miles flown and five fatal accidents, the miles per fatal accident being 896,922.

Considering all classes of accidents, including those referred to above as well as all others, the miles flown per accident in scheduled air transport operations for the first half of 1929 totaled 153,306 as there were 60 accidents. For the corresponding period in 1928, the total number of accidents reported was 35, which placed the miles per accident at 128,132.

As there was a total of 47,000,000 miles flown in miscellaneous operations in the 1929 period, and as there was a total of 118 fatal accidents, the miles flown per fatal accident in this class of flying amounted to 398,305, while in the same period in 1928, the total mileage was 12,000,000, the number of fatal accidents was 92, and the miles flown per fatal accident numbered 130,435.

The total number of all classes of accidents reported in the 1929 six-month period in miscellaneous operations, was 714, which brought the miles per accident in miscellaneous operations to 65,826. This mileage per accident was more than twice that for the same period in 1928, as the records show but 30,380 miles flown per accident in that period. This latter figure is based on a total number of accidents for that period of 395 .

The causes of the accidents are divided into four major classifications—personnel, power plant failures, airplane failures, and miscellaneous. There is a fifth category given over to undetermined and doubtful causes.

The largest percentage of the accidents was attributed to personnel, the total being 59.04 per cent. The next largest cause was credited to power plant failures, which amounted to 18.08 per cent. Airplane structural failures contributed 8.80 per cent, and miscellaneous, 9.35 per cent. In the miscellaneous class, weather was credited with 5.02 per cent; airport and terrain, 2.78 per cent; darkness, 0.51 per cent and other causes not falling under the general classifications, 1.04 per cent. The percentage of undetermined and doubtful causes was 4.73 per cent.

CONTRACT for construction of the 16-story Aviation Building to be erected in Fort Worth, Texas, at a cost of $600,000 by the Aviation Building Corporation, has been let and work started February 1. Completion of the building for occupancy by September 1 is called for in the plans. General offices of Southern Air Transport, Inc., will be maintained in the new building.

Business Men are Best Flying Patrons

SEVEN-EIGHTS of the business men of the United States would pilot their own airplanes if they owned them. The other one-eighth admitted that they would employ the services of a trained and experienced pilot.

These facts were obtained through a written questionnaire presented to 3,557 members of chambers of commerce and civic clubs by Earl J. Smith, assistant to the president of Stinson Aircraft Corporation.

The following are some more interesting statistics gathered at the same time: 49% of the middle-aged, successful business men have ridden in an airplane at least once. The average number of rides for those who have ridden at all was found to be 4. This definitely proves that after the first ride, the fear and uncertainty of the safety and reliability of a licensed airplane disappears altogether, and instead, the business men enjoyed the ride and admitted confidence in present-day enclosed cabin airplanes.

That 49% of the business men in the territory included in the survey had ridden one or more times in an airplane will be news to the aircraft industry as well as to the public in general. Only 777,588 rode in airplanes in 1928. Since there are over 120,000,000 people in the United States it is apparent that the great majority of air passengers that year were business men and professional men, or that the business men in these states in which this survey was made, are not only air-minded but more air-confident than those of other states.

Fifty-one per cent of the men interviewed admitted they had never taken a ride in an airplane, and gave the reason that they promised their wives not to ride unless they accompanied them, or that their type of business did not require speedy transportation. A very small per cent frankly admitted they were afraid to fly. A sure thing is that the non-riders of airplanes are the women, and the people who make up the urban population.

Curtiss Inaugurates New Pilot Pay Schedule

A NEW system for regulating pilots' salaries has been put into effect by the Curtiss Flying Service. Under the new plan the base pay has been raised considerably, and the flying pay reduced to a figure similar to that in use in the Mid-West and on the Pacific Coast.

On January 1 the following rates were effective for pilots in the Curtiss system: Chief pilot—$3,600 per year base pay; Grade A (present graduates of the Instructors' School and other experienced men) —$3,000 per year base pay; Grade B (all new pilots will start as Grade B pilots, except under exceptional circumstances)—$2,500 per year base pay.

In addition to base pay as outlined above, the Chief Pilot and Grade A pilots will be paid flying time at the rate of $3.00 per hour for single-motored ships and $4.00 per hour for multi-motored ships; Grade B pilots $2.00 per hour. Double flying pay for night flying.

These schedules are maximum rates of pay.

Hereafter pilots on cross country missions will not be paid for actual flying time, but on a mileage basis which will be reduced to terms of time.

Standard Reduces Rates for Federal-State Officials

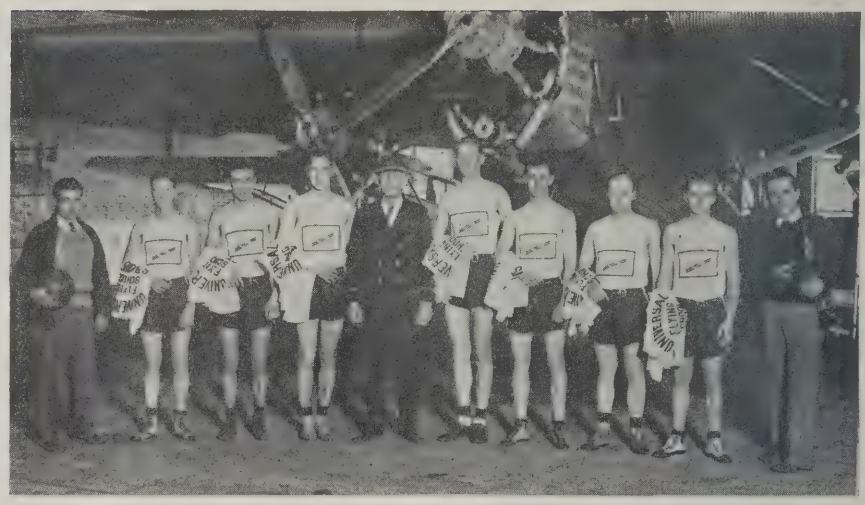
SPECIAL travel rates for Federal and state officials in four states and the officials of counties and cities located in their territory became effective January 8 over the Standard Airlines.

Under the new travel rates which are equivalent to rail fare plus pullman, Federal, state, county and city employes traveling on official business will be able to utilize air transportation over any division of the Standard Airlines route between Los Angeles and El Paso at a saving of time and at the customary rail and pullman fare.

State officials extended this privilege are those in California, Arizona, New Mexico, and Texas while the county and city officials effected are those located in the counties in which Standard Airlines maintains regular landing fields.

The same reduction which was put into effect recently over the Western Air Express system has met with favorable acceptance and has already been used advantageously.

This reduction in rates to public officials which is now in effect by the Standard Airlines, Western Air Express, West Coast Air Transport, and the Mid Continent Air Express is believed to be a definite step toward the equalization of air and rail rates.



THIS is the flying basketball team of the St. Louis-Universal Flying school. Each player is a student transport pilot. The basketeers with their coaches fly to every out-of-town fray in a tri-motored plane, or in several training planes. Practice is held every day in Universal's gymnasium at the Municipal Airport. Director W. P. McFail of the school escorts the team to each game played.

Spartan Aircraft Re-Elects Officers

At the annual meeting of the stockholders of the Spartan Aircraft Company, held January 21, the following officers and directors were re-elected:

Officers: L. V. Kerber, president; Rex B. Beisel, vice-president; S. L. Willits, vice-president; and J. F. Lanier, secretary and treasurer.

Directors: W. G. Skelly, president, Skelly Oil Company; C. C. Herndon, vice-president Skelly Oil Company; F. T. Hopp, treasurer, Skelly Oil Company; L. V. Kerber, president Spartan Aircraft Company; Rex B. Beisel, vice-president, Spartan Aircraft Company; S. L. Willits, vice-president, Spartan Aircraft Company; J. F. Lanier, secretary and treasurer, Spartan Aircraft Company; and L. R. Dooley, sales manager Spartan Aircraft Company.

Frederick B. Rentschler, president of the Aeronautical Chamber of Commerce of America, Inc., recently announced the appointment by the Executive Committee of Luther K. Bell as general manager of the Chamber. Mr. Bell has been acting general manager since last July.

Medical Examinations For Aircraft Pilots

The Aeronautics Branch of the Department of Commerce now has approximately 775 medical examiners located throughout the United States whose duty it is to examine pilots and student pilots as to their physical and mental fitness for flying before they are licensed, and to check those who are already licensed, by periodic examinations, according to Clarence M. Young, Assistant Secretary of Commerce for Aeronautics.

The number of physical examinations conducted by these official medical examiners and certified by the Aeronautics Branch is growing rapidly each year—having increased from 11,688 during 1927-28 to 28,153 during 1928-29. Dr. L. H. Bauer, Chief of the Medical Section of the Aeronautics Branch, predicts that during the year 1929-30 the number of physical examinations for fliers will increase to more than 50,0000

Theodore S. (Ted) Lundgren has been appointed director in charge of the sales and advertising department of Emsco Aircraft Corpn., Downey, Cal. Lundgren has been actively engaged in the aviation industry for thirteen years, seven of which he has spent on the Pacific Coast. He served as a pilot in the U. S. amy in 1917, 1918, 1919. After the World War he was engaged in sales promotion work. He entered the Dole Race Aug., 1927, with the "Spirit of Los Angeles", and was the first to contemplate a flight of the Pacific to Australia by way of Suva.

International Scholarships at Tampa School

THE first graduates under the South's first international aviation scholarship soon will be flying their own planes over the mountains

Captain A. B. McMullen

and jungles of Central America.

Their names as Spanish as their countries, four Latin American fliers recently lined up at the Tampa, Fla., municipal airport and got their licenses from the United States Department of Commerce, marking the completion of the initial session of Tampa's international training course. They were Jose R. Aguilar, of Honduras, Capt. F. M. Letona, of Guatemala, Lieut. Herman Baron, of Salvador, and M. Gelabert, of Panama.

They will return home as army instructors, pilots and mechanics with licenses earned from Tampa's gesture of good will to aviation and its neighbors to the South in providing their aviation scholarships.

The movement was inaugurated by the Tampa chamber of commerce and sponsored by Tampa civic clubs, business men and the McMullen Aircraft Company, at whose school the fliers received their training.

The students are the pick of their nations—the Lindberghs of the Caribbean. Some were chosen by their government for their potential aviation abilities. Some were selected by popular vote of their entire countries. All studied seriously and completed their courses in less than six months.

Tampa found whole-hearted cooperation in the plan in nations to the south. The United States secretary of state made the required diplomatic arrangements.

The first students were so successful, their people so enthusiastic, that Tampa may expand the movement to include other countries and more than one student from each country. The graduates of the course, in years to come, are expected to do much in developing tropical airways and speeding the development of air commerce out of Tampa.

The foreign fliers were trained under the personal supervision of Capt. A. B. McMullen at the McMullen Aviation School, which raised its prestige to international scope through the work.

The school helped make the scholarships possible through reduced rates to the sponsors and additional advantages of special instruction. For Captain McMullen and the school, the licensing of the fliers marked a milestone in their steady growth in aviation development at Tampa.

Captain McMullen is the outstanding aviation pioneer at Tampa. An advanced instructor in the army during the World War, he followed the course of many aerial developers, dealing in surplus war material and barnstorming with flying circuses. Then in 1925 he visioned the development of aviation southward through Florida, with its all-year flying weather, and opened his school with two war "Jennies" at Tampa. Months of hard sledding followed, with not many happy landings, as the fliers say.

But gradually the school took hold and Captain McMullen set his goal at providing competent pilots and ground men for the growth that was soon to follow. He was a jump ahead of everybody else two years ago when the city gave aviation its official recognition and provided its first municipal airport.

He increased his equipment and personnel steadily and his school is now one of the most widely known in the South. It has the distinction of training the only two licensed girl pilots in Florida, Miss Agnes Mills, of Tampa, and Miss Barbara Bancroft, of Melbourne.

Last September the school turned out five licensed fliers during the month, more than any other school in the South, and won commendation from Department of Commerce inspectors who issued the licenses.

A branch recently has been established at the University of Florida, offering the first aviation course for college credits in the South, with 12 students enrolled. They are trained by Captain McMullen at the flying field in Gainesville, the seat of the university, and given advanced work at the school's headquarters at Tampa.

Three experimental airplanes have been designed, built and test flown under Captain McMullen's supervision at the school, including the Mac Airliner, a seven-passenger cabin monoplane with detachable motor mount for the latest production engines.

First graduates under Tampa's international aviation scholarship, left to right: Jose R. Aguilar, Honduras; Captain F. M. Letona, Guatemala; Herman Baron, Salvador, and M. Gelabert, Panama.

A final test flight upon its completion was made with 2,000 pounds of sand and a full load of 160 gallons of gasoline. Taking off in less than 500 feet, the Airliner made a top speed of about 140 miles per hour and landed at the slow speed of 45 miles. It was flown from Tampa to Chicago, 1,000 miles, in eight hours and 50 minutes.

The school now has four ships on its building line, requiring various classes of work from wing rebuilding to motor overhauling.

It is going ahead with an expanded winter program and recently has leased an entire apartment house near the airport for its students. Some of the foreign fliers, at least, will remain for advanced training.

Captain McMullen is assisted in his work by the following department heads: Ernest Hensley, business administration; W. G. Stewart, public relations; J. Lewis Blalock, airplane and motor maintenance; A. A. Overstreet, welding; and S. S. Baxter, woodwork.

Braley School Being Rapidly Rebuilt

Buildings and other equipment destroyed by fire at the Braley School of Flying, Wichita, Kans., January 13, will be replaced immediately, according to advice from officials of the school.

While flying activities have been hampered somewhat by loss of equipment, the school is in position to continue instruction. Ample temporary space is available and enough planes have been placed at the disposal of the school to carry on the instruction, it is stated.

At a meeting of the directors following the fire, they voted unanimously to start immediate construction of a new administration building. Officials say the building will be complete within thirty days. The value of property destroyed was estimated at $90,000.

Stearman Directorate is Reorganized

The directorate of the Stearman Aircraft Company has been changed to conform to the policy of the United Aircraft and Transport Company, of which the Stearman company is now a subsidiary. All members of the directorate of the Stearman company handed in their resignations at a meeting January 4. Resignations were tendered in order that the policy of the United corporation of having only those actively engaged in aviation as members of the board, might be met, it is stated.

The following officers were elected at a recent meeting of the board: Lloyd C. Stearman, president; Walter P. Innes, Jr., vice-president and general manager; Mac Short, vice-president in charge of engineering; J. E. Schaefer, secretary.

Directors are: H. A. Dillon, Frederick B. Rentschler, and William E. Boenig.

Members of the board tendering their resignations were: J. E. Schaefer, G. M. Brown, C. L. Henderson, J. O. Davidson, Ralph Middlekauf, George Siefkin and H. M. Steinbuchel, all of Wichita, and Robert E. Gross of New Haven, Connecticut.

THE Emilo Carranza medal for 1929, considered the highest annual trophy for aviators given in Mexico, is to go to Col. Roberto Fierro, it has been announced.

Col. Fierro made a non-stop flight from Mexicali to Mexico City in 1929 and from the Mexican capital to Cuba. Col. Fierro also won second place in the Mexico City-Kansas City air derby.

Frederick B. Rentschler will act as chairman of the board. Mr. Schaefer will continue as sales manager, with L. M. Divinia acting as assistant sales manager in charge of service.

Carpenter Predicts Speed of 500 M. P. H.

Dr. Ford A. Carpenter, noted aviation authority, predicts that a speed of 500 miles per hour will be made in the 1937 Schneider cup race.

"The rate of increase during the sixteen years of the races would indicate that this speed will be easily attainable seven years hence," said Dr. Carpenter. "Tests made by flight surgeons show that there is no limit to the possibilities of attainable speed so far as its effect on the human body is concerned.

"Outstanding among the features of the sixteen years of Schneider cup racing," said Dr. Carpenter, "is the fact that race speed is always the commercial speed seven years later. This fact makes Schneider cup races effective and worthy," he said.

Record Year for N. A. T. Planes and Pilots

PLANES and pilots of National Air Transport flew a total of 2,646,966 miles in 1929, of which 1,270,668 miles or approximately half the total, were flown at night, N. A. T. officials report. This is an increase of 400,000 miles over the 1928 mileage.

National Air Transport is carrier of air mail and air express between New York, Cleveland, Toledo, Chicago, Kansas City and Oklahoma and Texas cities.

While N. A. T. planes were piling up this mileage during the last year they were carrying a cargo of 2,027,959 pounds of mail and 75,607 pounds of express. This is approximately 900,000 pounds more cargo than was carried by the company in 1928.

Increased regularity of service over the N. A. T. lines during the year was due in no small measure to the application of radio as a means of overcoming bad weather conditions, according to Lester D. Seymour, general manager.

"All N. A. T. planes during the year were equipped with radio receiving sets," said Mr. Seymour. "These sets, on which much work has been done by N. A. T. engineers cooperating with experts of the airways division of the U. S. Departemnt of Commerce, are capable of receiving weather reports for the pilot while in flight, as well as keeping him on his course through the dots and dashes of the radio range beacons along the airways.

"In many instances N. A. T. pilots were enabled to complete trips over the mountains between Cleveland and New York with the aid of radio, that would otherwise have been forfeited because of impossible weather conditions."

In summing up the year's flying activity, Mr. Seymour said that in the four years of N. A. T. operations, N. A. T. planes have flown 6,536,813 miles and have carried 3,507,463 pounds of mail and 160,854 pounds of express.

At a recent meeting of the Board of Directors of Curtiss Airports Corporation at 27 West 57th Street, New York, N. Y., the new name "Curtiss-Wright Airports Corporation" was passed on and the corporation will therefore be known hereafter as the "Curtiss-Wright Airports Corporation."

Advanced Transport Course Added by Spartan

ANNOUNCEMENT is made by officials of the Spartan School of Aeronautics, Tulsa, Okla., that an Advanced Transport Course has been added to the school's curriculum.

The advanced course is being offered in cooperation with the Southwest Air Fast Express Lines and instruction will be given students by R. W. Cantwell, chief pilot, and Lawrence Fritz, general manager of the S. A. F. E. Air Lines.

An outline of the Advanced Transport Course and the Advanced Mechanic's Course is as follows:

Ten Hour Flying Course—Includes 10 hours dual instruction in Ford tri-motor airplanes, with special emphasis on: Transition to tri-motors, landings, take-offs, precision landings, stalls and recoveries, banks up to 90 degrees, wing-overs, and tight vertical spirals. One hundred hours ground school instruction including subjects as outlined in Mechanic's Course. Average time, 2 weeks, tuition $450.

Twenty Hour Flying Course—Includes 20 hours dual instruction in Ford tri-motor airplanes and ground school instruction as outlined in course above. Average time, 4 months, tuition $850.

Advanced Mechanic's Course—Includes 100 hours instruction in motor repair and maintenance, construction and maintainance of tri-motor all-metal airplanes, and modern air line operation. Average time, 6 weeks, tuition $100.

A portion of the flight squadron group of the Miami Aero Club, Miami, Fla., is shown above. The club, organized less than a year ago, has grown until it now has 64 members on its register. Two planes are in daily operation. A transport pilot is regularly employed to instruct members of the club and conduct a ground school which all members attend. Among the 64 members are lawyers, doctors, merchants, and architects. Glenn H. Curtiss and Senator Hiram Bingham are members of the club

Stuart New Publicity Man for Fokker

Capt. E. V. Rickenbacker, vice-president of Fokker Aircraft Corporation, announces that John Mc Hugh Stuart has been engaged by the company as publicity director. Mr. Stuart has been for many years reporter, correspondent and special writer for magazines and newspapers here and abroad. As London correspondent of the old New York Herald just after the war he established the first regular delivery of newspapers by airplane, maintained by the Paris edition of the New York Herald, whereby its issue published in Paris was sold on the streets in London early the day of publication.

Beginning with the flight of Glenn Curtiss from Albany to New York twenty years ago, Mr. Stuart has covered as a reporter many of the epoch-making events in aviation on both sides of the Atlantic, in addition to his work as a political and diplomatic correspondent and editorial writer, for the old New York Sun, the New York Herald and the New York American.

Mr. Stuart comes to Fokker from Roosevelt Field where last summer he established a press relations department for the new management of that field.

Charles Smoot, former Texas Air Transport mail pilot, has been made manager of the airport at Big Spring, Texas, succeeding Loy A. Mitchell.

The Oklahoma legislature has made no provision for exempting airplanes from payment of the three-cent gasoline tax for maintaining Oklahoma roads, the attorney general recently held in a formal opinion. The State Chamber of Commerce, under the direction of W. B. Estes, secretary, is leading a drive to have the regulations revised at the next session in 1931, however.

The general traffic of the new Curtiss-Wright Marine division at Miami, Fla., is under Robert T. Bellchambers. The marine base is under charge of Captain Harry Rogers. who for nine years operated the Rogers Air Lines in Miami. Captain George Cobb, chief pilot, reported that all pilots will wear military uniforms, so that the appearance and service of the company can be maintained all around. Curtiss marine pilots ready for the season are: Russell Rogers, George Rummil, Eddie Stafford, Robert Moore, Cal Latham, George Hand and Jack Arthur.

The Ryan Division of the Detroit Aircraft Corporation announces the appointment of the Florida State Airways as Ryan distributors for the entire state of Florida. The company has taken delivery of the first J-6 Ryan Brougham demonstrator, and William Lindley, vice-president of the company, is now appointing dealers.

A new company has been organized in Dunedin, Fla., known as the Florida Aircraft Corporation, to manufacture airplanes and equipment. Officers of the new company are B. D. Skinner, president; V. W. Skinner, vice-president; and B. W. Campbell, secretary.

A new firm known as the Solar Aviation Company has been organized in Mobile, Ala., with a capital of $24,000, $11,000 of which has been paid in. Its organizers are E. E. McCarthy, E. E. Lingfelter, and L. M. Lingfelter. The company plans to do a general line of aviation business, including taxi service and operating a school.

The Georgia Eaglerock Sales Company, under the management of E. B. Fuqua, has been established at Gainesville, Georgia, to handle distribution of Alexander Eaglerocks.

1929 Aircraft Production Shows Big Increase

THE American aircraft industry produced airplanes and engines valued at $98,000,000 during 1929, the annual production report, copyrighted by the Aeronautical Chamber of Commerce of America, Inc., shows. The complete report will be included in "The Aircraft Year Book for 1930" ready for distribution February 15.

Twenty-five aircraft engine manufacturers reported a total of 7,378 engines produced during last year for both military and commercial use, representing a total valuation of $26,495,830.15. The value of 6,034 commercial and military airplanes produced by 96 major manufacturers was announced at $44,457,300.60 in another report of the Aeronautical Chamber of Commerce.

"Of the 7,378 engines manufactured, the commercial market received 5,517, and the military, 1,861. Commercial engines represented a total value of $17,895,300 and military motors, $8,600,530.15. Ninety-five per cent of the engines were manufactured by members of the Aeronautical Chamber of Commerce.

"Comparing this report with 1928 figures, commercial production increased 3,667 units or 193 per cent. Military engine production was 448 units higher than in 1928, representing an increase of 32 per cent. The value of commercial engines increased $8,958,575, or 100 per cent. The valuation of military engines was not compiled in 1928, so that it is impossible to compare figures in that field. Total engine production, including those for military and commercial purposes, showed an increase of 4,115 units or 126 per cent.

"Most of the engines produced were in the class above 300 horsepower. There were 1,404 motors rated above 300 horsepower manufactured during the year with a total retail valuation of $8,727,100. The second largest number fell in the class between 76 and 125 horsepower, with 1,309 units valued at $2,013,750. The third largest group was rated between 126 and 175 horsepower, with 1,208 engines valued at $3,158,000.

"In the class below 75 horsepower, 479 engines valued at $367,950 were produced. Between 176 and 225 horsepower, 656 engines valued at $1,638,500 were manufactured; and in the 226 to 300 horsepower class, 552 units were made with a valuation of $1,990,000."

Consolidated Opens Assembly Plant at Langley

Establishment of an assembly plant at Langley Field, Virginia, for Commodore flying boats is announced by Ray P. Whitman, assistant general manager of Consolidated Aircraft Corporation, Buffalo.

A part of one of the large army seaplane hangars at Langley Field has been leased by the Consolidated company and the fourth of the twelve Commodores being manufactured for the New York, Rio & Buenos Aires Line is now being assembled in this hangar, where water and weather conditions are said to be ideal. A staff of eighteen men, including a chief company inspector, are now stationed at the new plant and this staff will be increased as additional Commodores are sent there from Buffalo.

Stinson Places Big Order With Bendix Corporation

Bendix Aviation Corporation has received one of the largest orders for airplane parts and accessories ever placed in the history of the aviation industry from the Stinson Aircraft Corporation, according to Vincent Bendix, president.

The order embraces 500 Scintilla magnetos, 500 Stromberg carburetors, 500 Bendix aviation-type brake sets, 300 sets of Eclipse electric starters and 300 sets of Pioneer aviation instruments.

This order for parts follows a contract for 500 Lycoming engines which Edward A. Stinson recently announced would be put in a new model cabin plane to be produced on a volume basis.

Six pilots, including one girl, Miss Anne Lincoln, were awarded wings at a recent meting in the executive offices of the Curtiss Flying Service at Bowman Field, Louisville, Ky. Certificates were awarded to 12 students. It was the first graduating class of the Curtiss Flying Service in Louisville.

J. M. Wulpi, general traffic manager for Interstate Airlines, Inc., a division of The Aviation Corporation, has moved his headquarters offices to Sky Harbour, Nashville's new air mail stop, where the general offices of Interstate recently were moved from Evansville, Ind.

American Eagle Reports Increased Gross Sales

THE American Eagle Aircraft Corporation reports an increased gross business in 1929 of approximately 15 per cent as compared with 1928, according to E. E. Porterfield, Jr., president. D. L. Chick, treasurer, reports a steady increase also in the parts and reconditioning business transacted by the company. This amounted to approximately $116,677 in the last year, as compared with $97,470 in 1928.

American Eagle contributed to the growth of the aviation industry in the Kansas City area with a new $250,000 factory situated on a two and a half acre tract adjoining Fairfax Airport. The factory has a combined floor space of more than 60,000 square feet as compared with 25,000 square feet in the place occupied a year ago. The company, organized in 1925, has outgrown four factories.

As a part of a reorganization program, Porterfield Aviation Interests, Inc., was formed in June, 1929, as a holding company for aircraft and aeronautical accessories concerns American Eagle might desire to purchase and merge with its own company. The first of these companies to be acquired was the Wallace Aircraft Co., Inc., of Chicago, builder of the Wallace Touroplane, a three-place folding wing cabin monoplane. This company was purchased in July and moved to the Kansas City factory of American Eagle.

During the year American Eagle expanded its sales operations very greatly under the leadership of D. H. Hollowell, sales manager. Three factory branches, each operating under a corporation organized in the states in which the branches are located, were launched. These are at Wold-Chamberlain Field, Minneapolis, Minn., Love Field, Dallas, Texas and Grand Central Air Terminal, Glendale, Calif. The factory branches carry complete stocks of American Eagles and parts for sales and demonstrations.

A Travel Air Biplane, motored with a 4-cylinder Chevrolair motor. designed for 100 hp., and 115 miles speed, recently came down from Indianapolis, and was on exhibit at the Bowman Field hangars, in Louisville. H. C. Brooks, experimental engineer for Chevrolair Motors, piloted the plane in the test flight.

Curtiss Wright Extends Dusting Operations

TWENTY modern airplanes equipped for dusting cotton and other crops will be concentrated as soon as possible at Houston, Texas, under E. J. Bond, manager of dusting operations for the Curtiss Wright Flying Service, according to Paul Jackson, manager for the company in Southern Texas, who has just returned to Houston from a series of conferences with officials in New York City.

"As a result," Mr. Jackson declares, "of this decision by C. S. 'Casey' Jones, president, and Major E. H. Brainard, vice-president in charge of operations, the Curtiss Wright Flying Service will be enabled during the coming season to protect the cotton crop throughout the great belt of planting which starts in lower Texas and swings northeastward in an arc through Louisiana into Mississippi.

"Mr. Bond, who has devoted several years to this vital service and is the recognized authority on airplane crop dusting, will have nearly four times as much equipment this year as in 1929. The planes will be ready to go into action this spring at the proper moment and swing gradually north as the season advances.

"To make this concentration on crop dusting possible," Mr. Jackson added, "the Curtiss Wright Flying Service plans to discontinue temporarily all other operations. While we consider this unfortunate, we have found it essential in order to be able to give the farmers our fullest cooperation against the boll weevil.

"We had intended to operate a flying school, taxi charter service and photographic service in the Houston area and we feel that it will prove something of a disappointment to our many friends to give this up at a time when the interest in flying is becoming so keen. During our period of organization, we have been much encouraged by the friendly support of Houston people and such groups as the Chamber of Commerce.

"At the same time, we believe that our concentration on crop dusting, which has been proven a vital factor in the prosperity of the state, will meet with unqualified approval even among those who may have wished to take up flight instruction this year. Just at present, the airplane can be of the greatest benefit to the people of Texas by helping the farmers raise bumper crops and it will be on this problem that we shall concentrate our energy."

Mr. Jackson explained that service of the Chrtiss Wright Flying Service other than crop dusting in Texas will continue with headquarters at Dallas, where a school will be maintained and planes held available for charter service. The fleet of twenty crop dusting planes will be brought together as soon as possible and prepared by mechanics for operation as soon as the season opens for the annual battle against the boll weevil.

R. W. Fulton Joins Consolidated

Announcement is made by the Consolidated Aircraft Corporation of Buffalo of the appointment of R. W. Fulton, formerly director of sales of the Colonial Flying Service, to be general sales manager. Before going

R. W. Fulton

with the Colonial system in the spring of 1929, Mr. Fulton was associated with the Tide Water Oil Company, first as chief engineer and later as manager of the aviation division whch he organized. He has been closely associated with the industry for the past twelve years, having received his training during the war at Ellington Field, Houston, Texas. He later served oversees with the 20th Aero Squadron, A. E. F.

A group of aviation enthusiasts have formed the Jacksonville (Florida) Flying Club with H. A. Pierce as chairman. L. J. Sawyer was elected secretary. A finance committee was appointed to handle funds for the purchase of a club ship. The club is organized according to a plan recommended by the Aeronautics Branch of the Department of Commerce.

Arrow Announces New Sales Policy

"DIRECT from factory to purchaser" will be the basis of the 1930 sales policy of the Arrow Aircraft & Motors Corporation, it is announced by F. Pace Woods, sales manager. The Arrow company is at present manufacturing the Arrow Sport Trainer, powered with the 60 h. p. LeBlond engine, and the Arrow Sport Pursuit, Kinner powered, upon which the following reduced prices are announced: Sport Pursuit, $3,995 (formerly $4,565); Sport Trainer, $3,131 (formerly $3,485).

Under Arrow's 1930 sales plan, orders and deliveries will be placed and accepted through sales representatives. These are classified as regional and territorial, the franchise of the former to be limited to one state, and the latter to the county in which the airport from which they operate is located.

An Arrow factory service depot will be established with each regional sales representative, it is stated.

All sales representatives, territorial as well as regional, must be engaged in the aviation business and operating from an accredited airport. They must be, or employ, a licensed pilot and licensed mechanic. Instead of working on a monthly basis, the representatives will operate under a quarterly agreement whereby 30% of the quota for the year is to be disposed of during the first quarter, 40% the second quarter, and 10% the last quarter.

The Fokker Aircraft Corporation announces that Carroll M. Aument has been promoted from production manager to factory manager of both the Teterboro and Passaic Plants.

Mr. Aument joined the Fokker organization in October, 1928, as production manager, having previously been associated with a number of automobile, truck and bus manufacturing concerns, as well as with the Wright Aeronautical Corporation.

The Texas Airplane Company has been appointed Eaglerock distributor in the Corpus Christi, Texas, district. The firm has installed Eaglerock demonstrators.

The Chilean government has purchased two model 5-AT Ford Monoplanes, the Ford Company announced recently.

Taxi Service Profitable for Virginia Company

THE possibilities of the aerial taxi as a means for increasing the revenue of commercial flying companies is strikingly demonstrated by the experience of the Grand Central Air Terminals, Norfolk, Va.

The company, operating the only commercial airport in Norfolk, began operations approximately a year ago, devoting its efforts at first almost exclusively to sight-seeing hops.

Dave Driskell, chief pilot of Grand Central Air Terminals

The aerial taxi service was inaugurated in the early fall, a Waco biplane being purchased for this purpose almost exclusively. The company worked out a schedule of charges to and from cities within a radius of 100 miles and the rates have been published in advertisements, printed on cards distributed among hotels and displayed in railway stations and steamship terminals.

Sportsmen from the North, en route to hunting lodges in isolated sections down the coast from Norfolk have made extensive use of the flying taxi. Arriving in Norfolk on early morning trains or steamers, by taking the flying cab, they are able to reach their hunting lodges scores of miles down the coast within an hour, a trip that would ordinarily require almost an entire day.

Out of this demand the Grand Central Company is formulating plans now for a regular air sightseeing service between Norfolk and Cape Hatteras, 120 miles down the coast on the North Carolina mainland.

This service is to be inaugurated in the early spring, when tourists begin to arrive for the season and negotiations are now under way for the purchase of a 6-passenger cabin plane to be used exclusively in this service, it is stated. The company has made arrangements for the use of a landing field on the sands of Cape Hatteras.

En route to Hatteras, the plane will stop at Kill Devil Hill, where the Wright Brothers made their first flight. A wide sand beach here makes a perfect landing field.

Blair is New Chairman of Detroit Aircraft

Following a Board of Directors meeting January 17, of the Detroit Aircraft Corporation, E. S. Evans, president, announced that Harold H. Emmons had resigned as chairman of the board of directors of the company and that Frank W. Blair, chairman of the board of directors of the Union Trust Company, Detroit had been elected as Mr. Emmons' Successor.

Other members of the board are Roy D. Chapin, C. W. Harrah, C. S. Mott, Charles F. Kettering, E. W. Lewis, W. B. Mayo, Carl B. Writsche, R. E. Olds, Sheldon R. Noble, Charles A. Parcelle, P. DeC. Ball, Harold M. Bixby, Thomas N. Dysart, John Speed Elliott, Harry H. Knight, Arthur H. Schwartz and Lawrence Whiting.

A new company headed by Paul Braniff has been organized in Oklahoma City to deal in aviation stocks and securities. The firm is capitalized at $1,500,000 and is known as Aviation Shares, Inc. The new company has already acquired shares in several aviation concerns, it is said.

A total of 13,539 hours was flown at Parks Airport during the calendar year 1929 according to an announcement by Oliver L. Parks, vice-president and general manager. Figured on a basis of 80 miles an hour average speed, the total represents 1,083,120 miles of travel—more than 43 trips around the earth at the equator. The hours total was divided as follows: student instruction, 12,107; passenger carrying, 980; test flying, "joy hopping," photographic missions and miscellaneous flying, 452 hours.

Henry Boynton, former sales manager of the aviation division of the Moto Meter Gauge & Equipment Corporation, has resigned to accept a similar position with the Elgin Watch Company. He will have charge of sales in all territory east of Buffalo. E. Grover Into, former lieutenant in the U. S. Navy, has been appointed to the position left vacant by Boynton's resignation.

New Insurance Company to Serve Aviation

THE Pilots Casualty Insurance Company has been organized and is being operated with headquarters in Chicago. The immediate object is to enable professional pilots and students to obtain life and accident insurance at a rate as reasonable as that in any other profession or industry.

An announcement has been made by Bert Wenzel, vice president of the organization, that plans are now being worked out whereby the company will eventually cover every branch of aviation, insuring passengers, pilots and planes against crash or other damages for transport, taxi service, trip, ferrying, instruction, etc.

At present the company issues two policies for licensed students, pilots, mechanics, operators, etc., one which pays a $2000 accidental life indemnity and if the insured is disabled by accident he receives $200 a month not to exceed twelve consecutive months, while the other policy pays a $1000 accidental life indemnity and if disabled by accident the insured receives $200 a month not to exceed two consecutive months.

Jacksonville C. of C. Has Aviation Committee

In accordance with a resolution adopted by the Jacksonville (Florida) Chamber of Commerce, an aviation committee has been appointed. This committee is made up of representatives of all civic organizations in the city doing anything in the way of aviation promotion. It forms a central group and a clearing house for aeronautical information of a local nature.

The purpose of the committee is to coordinate all aeronautical effort and prevent duplication. It will attempt to improve existing aviation facilities.

One of the first projects to be undertaken by the committee was a survey of the municipal airport with a view to improving air terminal facilities. Small groups have been appointed to investigate and make recommendations upon suggestions offered by local pilots.

The Alexander Aircraft Company, Colorado Springs, has started the manufacture of gliders. The first model to be produced in commercial quantities is of the primary training type. It sells for $375.

Speed Records Smashed on N. A. T. Lines

PILOTS of National Air Transport started the new year with an orgy of speed that shattered all divisional records of the N. A. T. lines between New York, Cleveland, Chicago, Kansas City, Oklahoma and Texas, with the exception of one.

On the night of January 5 the mail was flown from Dallas to Chicago, a distance of 995 miles, in five hours and twenty minutes, an average speed of 187 miles an hour. The Dallas-Kansas City division, through Ft. Worth, Oklahoma City and Ponca City, a distance of 541 miles, was flown by Pilot James D. Cleveland in three hours and ten minutes flying time, beating the previous record of four hours made by Pilot Richard L. Dobie a few days before.

At Kansas City, Pilot Robert W. Radoll relieved Cleveland at the controls and flew the 454 miles to Chicago in two hours and ten minutes flying time, a new record for the division, making the last 150 miles from Moline to Chicago in fifty minutes, or 180 miles an hour.

The highest speed registered between two points on this flight was the 627 miles from Wichita to Chicago which was flown at an average speed of 208.8 miles an hour.

The same night Pilots Dan Linsey and S. J. Samson, took the second section of the night transcontinental mail through from Chicago to Hadley Field, the New York terminus, in four hours and forty-five minutes flying time, an average speed of 150 miles an hour. The best previous time for the whole division was four hours and fifty minutes.

A few days before Pilot Henry J. Brown had carried the mail over the Cleveland-New York section in two hours and ten minutes, an average speed of 3.03 miles per minute. The previous record of two hours and fourteen minutes had been established by Earl Ward March 3, 1928.

On the day run from Dallas to Chicago, by way of Tulsa, Kansas City, St. Joseph and Moline, Pilots Lewis M. Gravis and Paul Reeder set a new record of five hours and thirty-five minutes.

Parks College Now Admits Women

The long standing policy of Parks Air College excluding women students from its flying courses has been discarded and women are now admitted to classes on an equal basis with men, it is announced by Oliver L. Parks, vice-president and general manager.

The fine flying record of Amelia Earhart, Louise M. Thaden, Gladys O'Donnell and other women pilots was largely responsible for the change in policy. Eight or ten of the women who are flying professionally in various parts of the country are generally regarded as competent as the general run of men flyers with the same air experience.

Air Associates, Inc., announce that a fully equipped parachute service department has been established at their building at the Roosevelt Field branch, Long Island. A Russell factory representative, an expert jumper and packer, will be on hand at all times to serve Air Associates' customers, and a packing table and complete stock have been set up in the parachute service room provided in the building, it is stated.

Spartan Opens Showroom at Tulsa Airport

One of the first modern airplane showrooms at an American airport is that of Spartan Aircraft Company, located in its new 35-plane hangar at the Municipal Airport, Tulsa, Oklahoma. The showroom, finished in a futuristic manner, is large enough to accommodate two fully rigged airplanes.

In addition to the showroom, the Spartan sales and advertising departments, Spartan School of Aeronautics offices, storage space for 35 airplanes and a complete service department are also located in the hangar.

Detroit Aircraft Forms New Sales Division

After a sales meeting held in the Detroit office of the Detroit Aircraft Corporation January 11 it was decided to divide the United States into sections. B. D. Adams will be acting general sales manager and will direct the activities of the department.

John Nulsen, general manager of the Ryan Division will have charge of sales in the central district for Ryan. Ray W. Brown will handle sales of Parks, Lockheed, Eastman Flying Yacht and gliders in the central territory.

Carl B. Squier, general manager of the Lockheed Division, will be in charge of Lockheed sales in the western district and Ted Schlueter will be western district sales manager for all other Detroit Aircraft products. C. R. Norton, eastern sales representative, will handle the sales of all products in the New York district and L. J. Robinson will represent the sales organization in the Southeast.

Parks Air College Opens Branches

Carrying out its policy of supplying students through a widely distributed sales organization, Parks Air College, Inc., recently opened offices in Toledo, O., and Birmingham, Ala., according to announcement by Oliver L. Parks.

The Toledo office is in charge of John A. Rose, formerly an executive of the Nash Motor Car Co., and the Birmingham office is in charge of William Morrell, former Alabama University baseball star and now a pitcher on the Birmingham Club of the Southern League.

A view of the modern airplane sales room recently opened by the Spartan Aircraft Company at the Tulsa Municipal Airport

Latest Developments in AIRPLANES AND ACCESSORIES

Davis Aircraft Announces Two New Planes

THE Davis Aircraft Corporation has announced two new Davis Monoplanes for 1930—the Davis D-1, powered with the LeBlond 60 Radial Motor, and the Davis D1-K, powered with the Kinner 90 Motor. The Davis D-1 is manufactured under Department of Commerce Approved Type Certificate 256, and the D1-K under Approved Type Certificate 272.

The new Davis Monoplanes follow closely the general construction of their predecessor, the Davis V-3, although a number of changes have been made which add to their performance.

Both the D-1 and the D1-K have the unique wing design which has always been characteristic of Davis Monoplanes, and which the makers say is largely responsible for the exceptional stability of the plane in rough weather. The wing combines both high-lift and general-purpose air-foil sections, and in addition is tapered both in form and section.

Both the D-1 and the D1-K are sturdily built to withstand rough usage, with a minimum of maintenance expense. Construction is of all-metal throughout, with the single exception of wing-spars, and fabric covering. Every care has been taken in the design and construction of the planes to make it possible to remove and replace the wings in a minimum time, and without the necessity of re-rigging.

Performance

Model D-1 with LeBlond 60: High speed, 101 m. p. h.; landing speed, 38 m. p. h.; cruising speed, 85 m. p. h.; climb, 700 ft. per minute; service ceiling, 10,000 ft.; cruising range, 300 miles; fuel consumption at cruising range, 4 1-2 gals. per hour.

Model D1-K with Kinner 90: High speed, 125 m. p. h.; landing speed, 40 m. p. h.; cruising speed, 105 m. p. h.; climb, 1,200 ft. per minute; service ceiling, 14,000 ft.; fuel consumption at cruising range, 6 gals. per hour; cruising range 400 miles.

The new Davis D1-K monoplane with Kinner 90 motor

The Department of Commerce has issued Approved Type Certificate No. 287 to the American Savoia-Marchetti, Type S-56. The ship is a three-place amphibian powered with a Kinner motor developing 90 horsepower. It is the first of its type to be granted an Approved Type Certificate, it is stated.

Fleetster is Newest Product of Consolidated Corpn.

THE Consolidated Fleetster is one of the latest products of the Consolidated Aircraft Corporation of Buffalo. It is an 8-place cabin plane with aluminum alloy monocoque fuselage. The wing is of the full cantilever type. The tail wheel is built into the fuselage. The N. A. C. A. engine cowling, built in three pieces, is used.

The seating arrangement consists of the regular pilot's seat and an auxiliary seat in the pilot's compartment. There are two seats in the main cabin. The cabin is upholstered throughout with modernistic materials.

Specifications

Type: 8-place, cabin, land, monoplane.

Dimensions: Length overall, 31 ft., 5 in.; height overall, 9 ft., 2 in.; wing span, 45 ft.; wing chord, tapered 104 to 69 in.

Weights: Empty, 3181.5 lbs.; useful load, 2128.5 lbs.; gross weight loaded, 5300 lbs.; wing loading, 16.-9 lbs. per sq. ft.; power loading 9.2 lbs. per h. p.

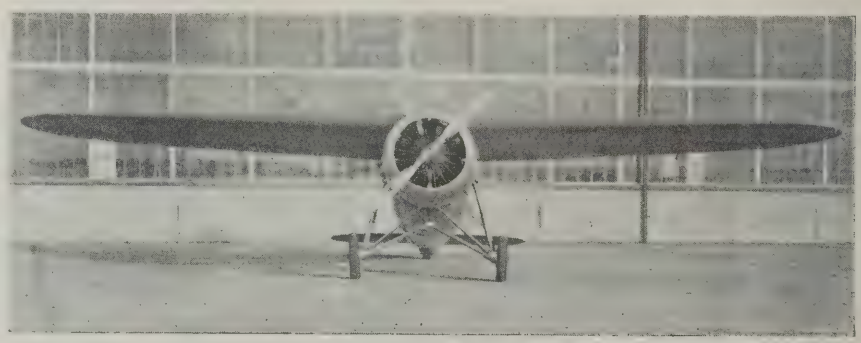
Areas: Wing (incl. ailerons), 313.5 sq. ft.; ailerons, 43.4 sq. ft.; rudder, 8.52 sq. ft.; fin, 13.46 sq. ft.; stabilizer, 25.34 sq. ft.; elevator, 17.18 sq. ft.

Power plant: P & W Hornet, rated 525 h. p. at 1900 r. p. m.; type, 9 cyl. air-cooled, radial; fuel capacity, 150 gals.; oil capacity, 12 gals.

Performance: High speed, 175 m. p. h.; landing speed, 59 m. p. h.; cruising speed, 145 m. p. h.; climb (at sea level), 1500 ft. per min.; service ceiling, 20,000 ft.; cruising range, 570 mi.

Construction: Fuselage, aluminum alloy monocoque; wing, Gottgen, 398 mod. airfoil section, wood box spars, wood ribs, plywood covered.

Price: (at factory): $26,500.



The Hornet powered Consolidated Fleetster, 8-place cabin monoplane

Boeing Announces "World's Fastest" Fighting Ship

THE world's fastest fighting airplane, one which can fly in excess of 200 miles an hour and climb to an altitude of six miles, has been developed by the Boeing Airplane Company, its officials announce.

It is said to be twenty-five miles faster than any other fighting plane produced on a quantity basis and it can engage in tactical operations at an altitude of 25,000 feet, approximately two miles higher than that at which aerial battles of the World War were fought.

The records were made with the Boeing Model 100, powered with a 425 h. p. Wasp engine, at Seattle and San Diego where Army and Navy officers flew the plane. The Boeing fighter picked up an extra twenty-five miles an hour speed at altitudes and fifteen miles an hour at ground levels over Model P-12, as Model 100 has certain improvements which give superior performance. A super-charger carries sea level atmospheric pressure to the engine at an altitude of 8,000 feet.

While final altitude tests have not been completed, Boeing engineers expect it to be substantially better than that of the Boeing P-12 Army pursuit ship which was recently flown to an altitude of 31,700 feet and to 30,000 feet with a full military load. This plane has gone from the ground to 10,000 feet altitude and back in four and one-half minutes.

The Navy is using planes of identical design and different only by addition of special deck arresting landing gear as the planes are assigned to the Lexington and Saratoga.

The Boeing Model 100 is a staggered biplane built to air service specifications and has an upper wing span of thirty feet and overall length of twenty feet.

The new Spartan C-3-225, with Wright Whirlwind seven engine

Pioneer to Manufacturer Paulin Altimeter

Aviation's greatest deterrent, the human element, has been reduced another measure through introduction of the Paulin level flight indicator, a highly sensitive precision altimeter and checking barometer to be built by the Pioneer Instrument Company of Brooklyn, officials of this company state.

The device, designed to furnish a pilot with continuous warning of deviations from a predetermined altitude, is scaled from 25 to 20,000 feet and varies from the usual type of altimeter in that luminous indicators move into position only when the plane flies at the level chosen by the pilot before taking off.

Boeing's latest fighting plane the model P-100. This model has many improvements over the Boeing model P-12

New Spartan C-3-225 Now in Production

SPARTAN Aircraft Company announces production of the new Spartan C-3-225, powered with the Wright "Whirlwind Seven," which has been awarded Approved Type Certificate No. 286. This is the second of the Spartan line to be offered with a "Whirlwind" engine, the other being the C-3-165, powered by the Wright "Whirlwind Five."

Specifications

Type: Three place open biplane.

Capacity: Three persons and 40 lbs. of baggage.

Dimensions: Length overall, 23 ft., 2 3-8 in.; height overall, 8 ft., 10 in.; upper wing span, 32 ft.; lower wing span, 32 ft.; upper wind chord, 60 in.; lower wing chord, 60 in.

Areas: Wings (inc. ailerons) upper, 151 sq. ft.; lower, 140 sq. ft.; Ailerons, 25 sq. ft.; rudder, 7.81 sq. ft.; fin, 8.12 sq. ft.; stabilizer, 23.6 sq. ft.; elevator, 18 sq. ft.

Weights: Empty, 1,741 lbs.; useful load, 959 lbs.; pay load, 380 lbs.; gross weight loaded, 2700 lbs.; wing loading, 9.3 per sq. ft.; power loading, 12 lbs. per h. p.

Power plant: Wright "Whirlwind Seven," rated horsepower 225 at 2,000 r. p. m.; type, 7-cylinder, air cooled; cylinder arrangement, single row radial; fuel capacity, 60 gal.; oil capacity, 6.5 gal.

Performance: High speed, 131 m. p. h.; landing speed, 49 m. p. h.; cruising speed, 110 m. p. h.; climb (at sea level) 1050 ft. per min.; service ceiling, 15,000 ft.; absolute ceiling, 17,500 ft.; cruising range, 450 miles.

Construction: Fuselage, welded chrome steel tubing, fabric covered; wings, Clark Y airfoil section; spruce I-beam spars; ribs, spruce, fabric covered.

Price $7750, fly away Tulsa.

Curtiss Tanager Embodies Many Novel Features

THE Curtiss Tanager, winner of the $100,000 prize in the Guggenheim safety competition, embodies many features that may be soon incorporated in commercial airplanes, Curtiss engineers believe.

The Tanager is the result of two years of study and experimenting on the part of Curtiss engineering staff, at the Garden City plant of Curtiss, where the company maintains a private wind tunnel.

The Tanager is a three-place cabin biplane, departing from conventional biplane design principally by the addition of three safety devices, one of which is an entirely new type of aileron invented by Curtiss engineers and developed by them in the wind tunnel. The other two devices are automatic wing slots and controllable wing flaps.

The most unusual feature of the plane is the new Curtiss aileron, which is floating and non-stalling, it is said. This aileron is mounted on the tip of the lower wing, where it operates in air undisturbed by the wings, and where its operation does not disturb the lifting characteristics of the wings. A symmetrical double cambered section is used, which is balanced aerodynamically by placing the axis of rotation aft of the leading edge.

The entire wing surface of the Tanager is fitted with automatic front slots and controllable rear flaps. The latter have a small slot open at all times just in front of them, which prevents the flaps from stalling and burbling at the high angles necessary for maximum lift.

The Curtiss C-72 wing section is used.

The tunnel tests showed that to get the best lift out of the automatic slots, mechanisms which had been used up to this time were inadequate, and a new type of roller support was developed. This installation is entirely automatic and is easily adjusted so that all slots over the span open simultaneously. The slots start opening at about twelve degrees angle of attack of the airplane and open gradually to their maximum position at sixteen degrees angle of attack.

The flaps in the back of the wings are operated by a crank in the cockpit, this being the only added control. All other controls are normal. About ten turns of the operating crank are required to manipulate the flaps, and when not used, the crank, which is at the pilot's right hand, can be turned back out of the way. The ends of the flaps are provided with cloth shields which come into operation when the flap is down, reducing the tip vortices, or air disturbances at the ends of the flaps.

Frontal view of the Curtiss Tanagar showing floating ailerons on tip of lower wing, and slotted upper wing.

The Guggenheim Safe Aircraft Corporation was established to achieve a real advance in safety of flying through improvement of aerodynamic characteristics without sacrificing the practical qualities of present day aircraft. The Tanager fulfilled these requirements and demonstrated a degree of safety never before obtained in commercial aircraft.

The Tanager, due to the use, for the first time, of 'floating' ailerons, developed by Curtiss engineers, cannot be spun under any conditions, it is said.

In case of a forced landing, the Tanager offers greater safety than current types of aircraft. It can fly at a minimum speed of only 35 miles an hour, can glide at less than 38 miles an hour, come to a dead stop after landing in less than 100 feet, and has demonstrated its ability to land in or take off from a field only 500 feet square, surrounded by obstructions. This has been made possible through the effectiveness of the floating ailerons in combination with the use of wing slots and flaps, Curtiss engineers say. The ailerons are controlled in the usual manner, the slots are automatic in action, and the manual control of the wing flaps is simple, it is said.

The cabin of the Tanager accommodates three persons in a single row. Dual controls are provided. Entrance is from either side.

The engine is a stock Curtiss Challenger developing 170 horsepower at 1800 r. p. m.

The wing beams and ribs of the Tanager are of wood. All the rest of the ship is of metal construction, cloth covered.

Type: 3-place, closed, land biplane.

Dimensions: Length overall, 26 ft., 8 in.; height overall 11 ft., 4 in.; span overall, 43 ft., 10 in.; chord (upper), 60 in., lower, 60 in.; mean aerodynamic chord, 60 in.; gap, 69 in.; stagger at leading edge, 29½ in.; incidence, upper—2 degrees, lower—2 degrees; dihedral (lower), 4 degrees, (upper) 4 degrees; sweepback (upper) 0, (lower) 0.

Areas: Wing area including flaps, 333 sq. ft.; ailerons, 45 sq. ft.; horizontal tail, 47.6 sq. ft.; vertical tail, 20.4 sq. ft.; elevators, 23.4 sq. ft.; rudders 14.1 sq. ft.

Power plant: Curtiss Challenger, rated 175 h. p. at 1,800 r. p. m.; fuel consumption, full throttle, 89.3 lbs. per hr.; oil consumption, full throttle, 3.4 pounds per hour; fuel capacity, 57.5 gals.; oil capacity, 3 gals.; propeller, Hamilton (wood); propeller diameter 8 ft. 4½ in.

Weights: Weight empty, 1959 lbs.; useful load, 882 lbs.; pilot and observer, 370 lbs.; fuel and oil, 359 lbs.; equipment, 68 lbs.; ballast, 85 lbs.; gross weight, 2841 lbs.

Performance: High speed, 110 m. p. h.; minimum speed, 35 m. p. h.; rate of climb at sea level, (600 ft. per minute; endurance, (full throttle), 3.6 hrs.; range (full throttle), 405 miles; service ceiling, 12,500 ft.; absolute ceiling, 15,000 ft.

The United States Bureau of Standards is developing a remarkable radio instrument known as the "high-frequency landing beam," which will not only lead an airplane pilot to the landing field but will actually lead him down to a landing, it is stated. The pilot picks the beam up at an altitude of 2000 feet when three miles from the field. In effect he then simply "glides down" the beam to the field and lands, regardless of the density of the fog in which he is flying. A number of successful test flights have been made by pilots using the beam. This invention again brings the day nearer when aircraft will conquer fog.

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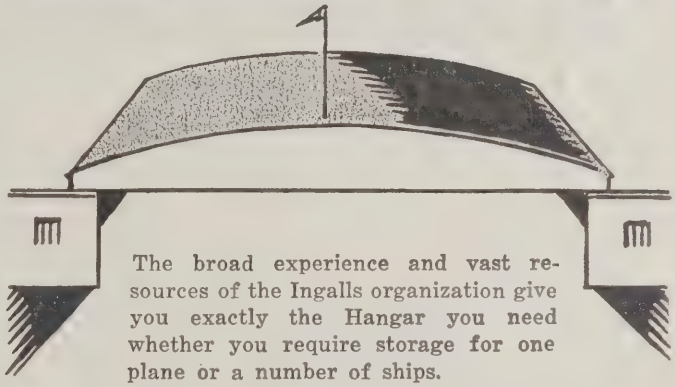

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Sullivan K-3 Is Flight Tested

THE Sullivan K-3, a low wing cabin monoplane, designed by William P. Sullivan, of the Sullivan Aircraft Manufacturing Company of Wichita, Kansas, has been given extensive flight tests, and will be placed in production as soon as the company's factory is complete, Mr. Sullivan announces.

The cabin of the K-3 may be entered from either side; the interior is upholstered in two tone mohair; it is sound-proofed with Dry Zero. Cabin heating is controlled by two inlets from either side of the cabin, and a baggage compartment is located to the rear of the passengers' seat.

The K-3 is equipped with a Heywood starter; brakes are optional.

The Kinner-powered Sullivan K-3 monoplane

Specifications

Type: 3 place, low wing, cabin, monoplane.

Dimensions: Length overall, 24 ft., 5 in.; height, 6 ft., 10½ in.; span 36 ft.; chord, at root, 75 in.; chord at tip, 51 in.

Areas: Wing area, 168 sq. ft.; aileron area, 13.4 sq. ft.; stabilizer area, 17.5 sq. ft. Elevator area, 10.3 sq. ft.; fin area, 5.5 sq. ft.; rudder area, 6.8 sq. ft.

Weights: Gross weight, 1938 lbs.; useful load, 766 lbs.; wing loading, 11.5 lbs. per sq. ft.; power loading, 17.6 lb. per h. p.

Power plant: Kinner K-5. Type, 5-cylinder, radial, air cooled.

Performance: High speed, 132 m. p. h. at sea level; landing speed, 42 m. p. h.; cruising speed, 112 m. p. h.; ceiling, 14,200 ft.; gas consumption, 7.4 gal. per hr.

Construction: Fuselage, welded steel tubing; wings, spars of wood, box construction; ribs, steel tube construction; aileron, steel tube construction; shock struts, Rusco and Oildraulic.

Wright Corpn. Licensed to Make New Motor

The Wright Aeronautical Corporation of Paterson has acquired the exclusive license to manufacture an aviation engine of revolutionary character, according to Alfred Schwarz, consulting engineer of the Holloyt Motor Corporation of New York, and inventor of the new motor. Mr. Schwarz is a metallurgist and gas chemist, and is president of the Wing Aeronautical Corporation, of New York City.

Mr. Schwarz states that the dominant virtue of the new motor is that it produces a horsepower unit with 40 per cent less fuel than engines in use today. This feature answers an urgent need in air transport as it increases the pay load by a large percentage. The added efficiency is obtained through complete combustion and the conservation of heat into power that is usually lost. The weight of the engine is lighter per horse power developed than present air motors, but the immediate advantage is the lessening of fuel weight as well as the economy of operation, according to the inventor.

The Consolidated Aircraft Corporation has reduced the price of the standard Kinner Fleet training plane from $4895 to $3895, flyaway, Buffalo.

New Skylark Specifications Are Announced

THE Watkins Skylark is undergoing tests at the Watkins factory in Wichita, Kansas. All stress analysis and static tests have been completed, and the remaining tests for a Department of Commerce approved type certificate are being run, it is stated.

Production of the Skylark has started in the company's Wichita factory. It will sell for $2950.

Specifications

Type: Two-place open, land, low wing, monoplane.

Dimensions: Length overall, 23.5 ft.; height overall, 6 ft., 5 in.; wing spread, 37 ft.; wing chord, 4 ft., 9 in.

Areas: Wings (including ailerons) 175 sq. ft.; fin, 3.75 sq. ft.; stabilizer, 17.12 sq. ft.; elevator 13.8 sq. ft.

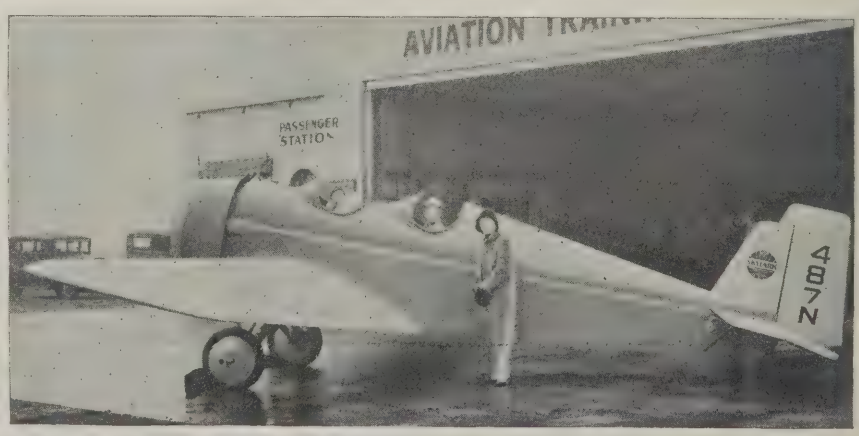
Weights: Empty, 885 lbs.; useful load, 465 lbs.; gross weight loaded, 1350 lbs.; wing loading, 7.7 lbs. per sq. ft.; power loading, 20.7 lbs. per h. p.

Power plant: LeBlond engine rated 60 h. p. at 1900 r. p. m., five-cylinder radial air cooled; fuel capacity, 20 gals.; oil capacity, 3 gals.; fuel consumption, 20 miles per gal. at cruising speed of 80 m. p. h.

Construction: Fuselage, reinforced shell and steel tubing; wings, 2 spar, using box spar and built up truss ribs; fabric covered.

Performance: High speed, 103 m. p. h.; landing speed, 35 m. p. h.; climb at sea level, 700 ft. per min.; service ceiling 13,000 ft.; absolute ceiling, 16,000 ft.

Three Curtiss Hawk pursuit biplanes with Wasp engines are the first planes of the pursuit type to be included in the equipment of the Cuban Army Air Service. The planes were flown from Mitchell Field to Cuba in January. They will be flown by Cuban military pilots. They were purchased through the Curtiss Aeroplane Export Corporation.



The Skylark, LeBlond-powered low wing monoplane

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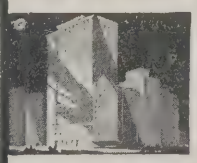

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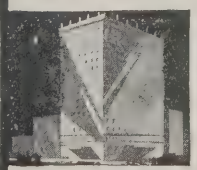

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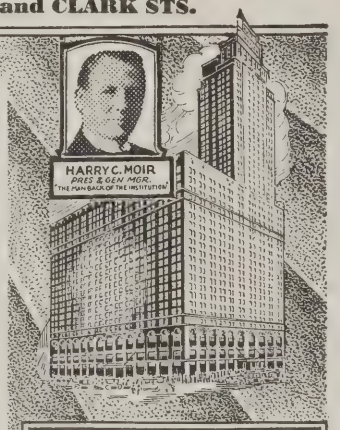

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Advertisers' Index

A

Aeronautical Chamber of Commerce of America ---------- Inside Back Cover
Aero Supply Mfg. Co., Inc. ---------- *
American Aeronautical Corp. ---------- 10
American Eagle Aircraft Corp. ---------- 8
American Propeller Co. ---------- 63

B

Bowman & Company ---------- *
Braley School of Flying ---------- *
Brunner-Winkle Aircraft Corp. ---------- *

C

Carolina Metal Culvert Co., Inc. ---------- *
Cessna Aircraft Co. ---------- *
Consolidated Instrument Co. ---------- *
Crouse-Hinds Company ---------- 2
Curtiss-Robertson Airplane Mfg. Co. ---------- 1
Curtiss-Wright Sales Corp. ---------- 1

E

Eastern Aircraft Supply Co. ---------- 63

G

Gilmore Oil Co. ---------- 7
Great Lakes Aircraft Corp. ---------- *

H

Harrison-Wright Co. ---------- 61
Harry Bros. Co., of La. ---------- 6
Heiss Hotel System ---------- 63
Henley Publishing Co., Norman W. ---------- *
Hotel Tuller ---------- 63

I

Ingalls Iron Works Co. ---------- 61

L

Logan Aviation Co. ---------- 64

M

Metal Aircraft Corp. ---------- *
Miami Air College ---------- 64
Miami Airplane & Supply Corp. ---------- 61
Morrison Hotel ---------- 64

N

New Standard Aircraft Corp. ---------- *

P

Parks Air College ---------- 3, 4 and 5
Parks Aircraft Corp. ---------- *

R

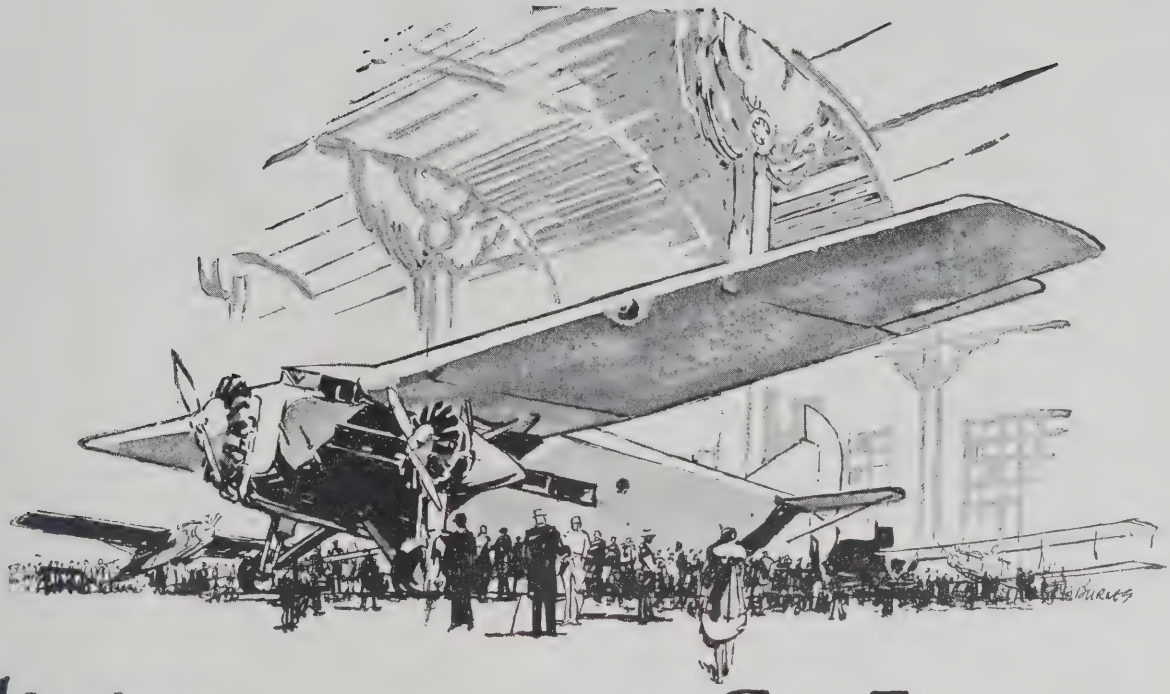
Ronald Press Co. ---------- 6
Russell Manufacturing Co. ---------- *

S

Service Steel Company ---------- 61
Southern Air Transport Co. ---------- *
Spartan School of Aeronautics ---------- 61
Stanavo Specification Board, Inc. ---------- Back Cover

T

Titanine, Inc. ---------- Inside Front Cover



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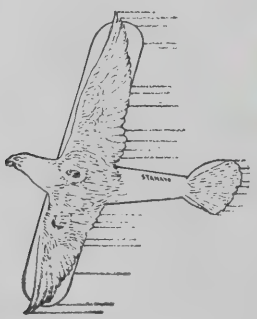

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SOUTHERN AVIATION

The Blue Book of Aeronautical Activities in the Southern States

MARCH 15, 1930

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UNIVERSITY OF GEORGIA

INDULGING in predictions of the aeronautical activity which may be expected five years hence seems to be the favorite indoor sport of many aviation enthusiasts. The topic is an absorbing one, but discussion of it does little to solve the industry's present problems. The task at hand requires immediate, aggressive sales effort—such effort as will transform some of the visions of 1935 into the actualities of 1930.

There is every indication that this year will mark the beginning of a new era in aviation. With the cost of air travel brought down to approximately the same level as other forms of transportation, and with a general downward price tendency, the most important factors limiting the immediate development of aviation have been removed. The advantages of air travel have been brought within the grasp of a multitude of people who, heretofore, could view the industry only from the side lines.

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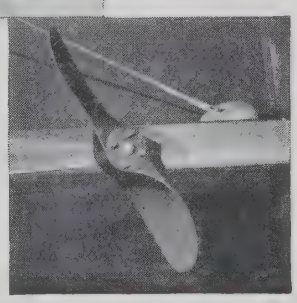

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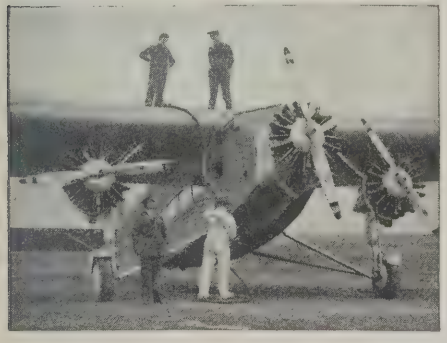

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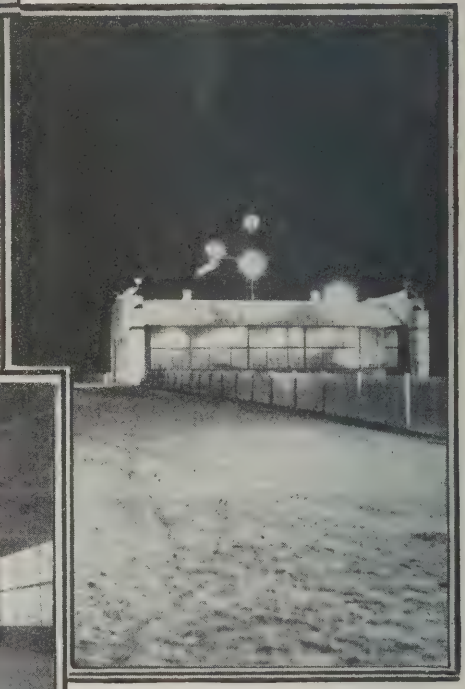

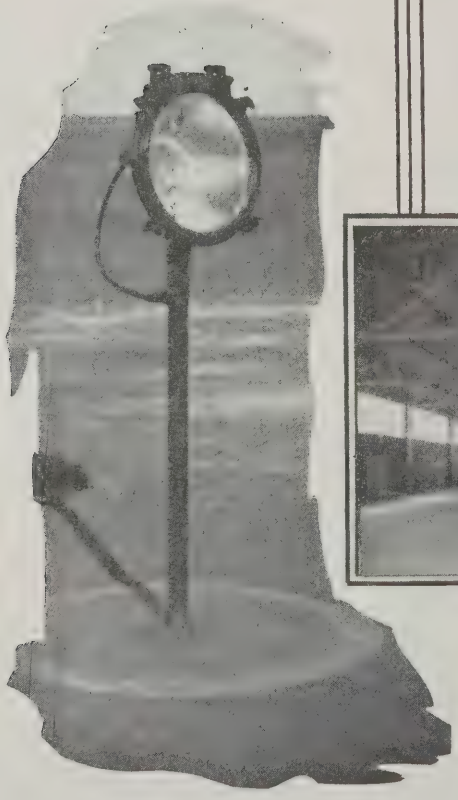

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Contents

Development of the Future Sales Outlets 7
The Sales Problem 8
Highlights of the Aircraft Exposition 9
Some of the Exhibits at the Exposition 11
The Exposition from the Marketing Viewpoint 12
New Airplane Models Shown at St. Louis 13
Many Refinements Featured the New Models 15
Operations of a 14,000 Mile Airway System 16
Servicing Wings and Bodies 20
Lubrication of Airplane Engines 23
Problems of International Flying 27
News of Southern Airports and Airways 29
Aeronautical Personalities 37
General News of the Aeronautical Industry 41
New Airplanes and Accessories 49

THE outstanding feature of the International Aircraft Exposition held at St. Louis, February 15-23, was the attention given to the marketing problems of the industry. While there has been considerable pessimism over the fact that production has outstripped sales, it may be taken for granted that when the leaders of the industry set themselves so energetically at the task of finding a solution of the problem, as they did at St. Louis, that solution will be forthcoming. It is evident that the coming months will see less attention giving to stunting and more emphasis placed on aggressive sales development. An interesting summary of the commercial aspects of the show will be found in this issue.

* * *

THE municipal airport at Tulsa, Oklahoma, in recent months has been setting a record for the entire country in the matter of passenger traffic, clearing an average of around two thousand passengers a week during January and February. Furthermore, it is authoritatively stated that this is one airport which is showing a highly satisfactory profit on its operations. The detailed story of the operation of the Tulsa airport is scheduled for our next issue.

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SOUTHERN AVIATION

Volume 1 March 15, 1930 Number 7

Development *of the* Industry's Future Sales Outlets

By E. V. Rickenbacker

Vice-President in Charge of Sales, Fokker Aircraft Corporation

THE great sales opportunity at the present time for the airplane manufacturer is, of course, the great transport companies that are using airplanes. They are piling up more air mileage in the United States than is piled up over all the rest of the globe put together. But it is the nature of successful manufacturing enterprises to expand. And none of us who remember how the automobile sales field expanded during the last twenty years can shut his eyes to the possibilities of an expansion along similar lines in the airplane field.

As between the two industries those of us who have known both see much alike and much that is different. Perhaps it is too bold a prophecy to envisage a time when there will be one airplane to every five people, as there is now at least one automobile to every five people in this country. But, in aviation, it is literally true in more senses than one that the sky is the limit—and none of our scientists has yet been able to tell us just what that limiting sky is.

The private owner and operator of the airplane is already entering the field, just as the private owner and operator of the automobile began to make his presence felt twenty years ago. The business executive to whom travel time is much more than money is looking toward the airplane, as is the sportsman. Richfield Oil Company has its own 14-place tri-motor Fokker for the efficiency of its officials. Shell has another flying office. Radio Corporation of America, Fox-Hearst Movietone, and a dozen great newspapers are already doing every-day business by air in their own airliners, with more and more business houses being daily converted to the use of planes.

Captain E. V. Rickenbacker

And sportsmen like Harold S. Vanderbilt, Gar Wood, James A. Talbot and Lawrence Fisher use modern de luxe planes as the men of an older generation used the first good automobiles.

So I think it fair to assume that the automobile gives us the precedent for the further expansion of this market in at least two respects. It is easy to remember how the first users of automobiles used them only with the help of "engineers." Then there came the day when, the engineer being unavailable and the need for the automobile urgent, the son of the house stepped forward and said, "Dad, I can do it," and he could. He had learned it from the engineer as his father had learned about horses from the coachman or the hired man as the case might have been.

Then came an era when the country was dotted with automobile schools. There was at least one in every town worthy of the name. Today the "auto school" is almost extinct. The present generation learn to drive a car almost by instinct. My little boy sits on my lap when I drive, with his hands on the steering wheel. He will drive himself almost before he knows it.

The large number of flying schools now operating are fulfilling a highly necessary function in training skilled pilots. For aviation needs nothing more than it needs the skill that will cut down even further its already remarkably low casualty rate, a rate remarkably low despite all of the sensational play given to the occasional disaster of the air. The necessary number of these schools will be reduced as two other factors increase: as the planes themselves gain in the automatic stability that will be certain to make

them easier and easier for the layman to fly; and as the newer generation, through familiarity with the plane and its functions, acquires almost instinctive knowledge of the bases of its operation.

These are the things that will develop customer demand for our product. How rapidly it is already developing is sometimes a source of amazement even to those of us who are in closest contact with the industry.

One further factor is necessary to meet that demand and thus put the industry on a soundly expanding basis. The cost of airplanes must be reduced. We already know the answer to that problem—mass production. Mass production and cheaper prices will be possible the moment the market demand justifies it. The automobile industry shows how the two grow, side by side, sometimes one leading and sometimes the other.

And that brings us to the problem of distribution. As things stand now the usual set-up is through direct sales by the manufacturer—much as busses are sold, or railway cars or any other expensive units to great transportation lines. When we once get into mass production, however, the set-up is bound to change. Airplanes of low price will have to be sold through an extensive dealer organization because of the obvious difficulties and burdensome unit selling expense where an attempt is made to sell such planes without dealer representation.

The Place of the Automobile Dealer

Here again the growth of the automobile industry provides a probable parallel. It is easy to remember that the first automobile dealers took on motor cars as a side line for their bicycle businesses. It is easy to predict that the most convenient distributor for the airplane in mass will be the automobile dealer. It will, for him, involve problems slightly different from those of his predecessor's expansion. His show room will do very well to show the smaller airplanes that will be produced for popular purchase. But it will take an airport, out away from the congested centers, for demonstration and for much of his service. With the growth of airports reported in this country for 1929, there will be few automobile dealers indeed within the next few years who are not within easy commercial reach of an airport. Perhaps the solution will be that they will use the ports for the display and demonstration of the planes and for minor repairs, while their places of business in the congested parts of the towns will be used for display and for such things as motor overhaul and heavy work.

Great steps are still in the taking with transport planes. The new Fokker 32-passenger plane injects factors into the transport equation that promise big things for its profitable expansion. It provides 150 per cent increase in pay load at something like 25 to 30 per cent increase in cost. It looks like the solution of the transport company's difficulties. Then will come the time when the whole industry will turn profitably to the cultivation of the wider field for the small, lower priced plane, of innate stability that the man once called the man in the street, can fly into the air.

The Sales Problem

By H. Gerard Bissinger

General Sales Manager, Brunner-Winkle Aircraft Corporation

AN INFANT, no matter how rapidly it grows, may still be an infant, and if so, must be slowly and carefully nursed into manhood. The airplane is still an infant industry. During the past year it has grown in leaps and bounds. Factories have sprung up throughout the country, running their plants on a production basis. A network of passenger and mail lines weaves back and forth throughout the nation. But as an industry, aviation is still an infant, and if it has grown quickly, great care must be exercised to insure that its growth is sound.

Today, sales is one of the vital problems facing the aircraft industry. Before this year, there was no sales problem, the demand for planes being greater than the supply. Production was the main consideration. Suddenly there was an influx of additional capital. New manufacturers entered the field. The older companies increased their production schedules. The industry was, for the first time, faced with the problem of selling airplanes. Sales organizations were rapidly formed to cope with this new condition. Let us take a panoramic view of how the situation was met.

As it would require too much time to familiarize new companies with the industry, the manufacturers turned to the established flying fields to dispose of their outputs. Another reason for appointing the flying fields as distributors was because of the fact that their operators would use a large number of planes for their own activities, such as instruction passenger "hops," taxi trips, etc. Figures show that by far the greatest percentage of planes sold, were used by the flying fields themselves.

In most cases, these flying fields were managed by pilots, familiar with airplanes, but inexperienced in sales. To these distributors, airplane sales did not prove lucrative enough to warrant their devoting their major attention toward that end. The number of distributors devoting their entire time to airplane sales is comparatively small. This is one of the serious problems confronting the aircraft manufacturer. Of course, as the demand for airplanes increases, this difficulty will gradually be eliminated but for the present it requires serious consideration.

To overcome this problem, some manufacturers have eliminated the distributor by handling their own distribution. This method seems to have promising possibilities for the manufacturer of varied types of planes, but for the manufacture of only one type of plane, it is economically unsound. Each type of plane has certain definite limitations. A large cabin plane cannot be used economically for the same purposes as a small open plane, nor vice versa. The sales field is too confining to warrant the manufacturer of only one type of plane handling its own distribution. This applies especially to the manu-

(*Continued on page* 19)

A glimpse of the interior of the Arena during the exposition. Photo by Wings Photo Service

Highlights *of the* International Aircraft Exposition

WHEN the doors of the St. Louis Arena closed on the exhibits comprising the International Aircraft Exposition, February 25, the more than 160 exhibitors of airplanes and aircraft accessories started homeward with a feeling that much of the pessimism prevalent in the aeronautical industry for the past few months was wholly unwarranted, after witnessing and participating in the sale of two and one-half million dollars worth of aircraft and aircraft products during the 10-day period.

The show brought together a comprehensive exhibit of airplanes and accessories that far eclipsed any previous aircraft exhibit. Eighty seven airplanes, few of which were designed or even planned when Lindbergh first centered the attention of the world on St. Louis, in 1927, filled the big arena. The estimated value of the planes, engines and flying equipment displayed at the show approximated $2,500,000, and the exhibit was viewed by some 150,000 of the air-minded of America and foreign countries.

Among the 87 planes exhibited were 50 new models shown for the first time. Many of the new models were refinements of designs already in production but more than 20 were entirely new.

While aerial circus stunts were not encouraged, the show furnished a stimulant to many of the country's flyers to attempt the establishment of new records. New altitude and loop records were established. Mildred Kauffman, nineteen year old Kansas City girl, broke the woman's world record for consecutive loops in an airplane by completing 46 loops, and Barney Zimmerly, who set a world's distance record for light airplanes recently, added to his honors during the show by breaking the world's altitude mark for light planes.

An unusual feature of the attendance was the number of small boys and youths who daily viewed the exhibits, evidencing a surprising knowledge of aeronautical terms and equipment to many of the veteran showmen. The indoor model contest held February 22 was partly responsible for the large attendance of youngsters throughout the ten-day period.

The increase in speed of the new planes exhibited at the show over the old models of last year was found to average approximately 50 miles per hour above that of their predecessors. Two of the planes on exhibit were found to have a top speed of more than 200 miles per hour, while most of them were capable of 125 to 150 miles per hour.

During the twenty-eight trade and technical meetings held during the show, aeronautical leaders were given an opportunity to exchange ideas and theories gathered from their personal experiences in the industry. As a result of these meetings aeronautical leaders left St. Louis with an idea of what

they will have to do during the remainder of 1930 in the way of engineering development and merchandising activities.

Many exhibitors learned of the advantages of shows as a medium for displaying their products to the masses. Sales of accessories and planes during the show were reported as reaching an approximate total of $3,000,000. One manufacturer sold 77 planes for a consideration totaling over $300,000.

Financial success of the show was assured as early as Thursday, February 20th, when the attendance reached the 100,000 mark. This provided the amount required to defray the $100,000 cash outlay necessary to put on the show. The show was another triumph for the Aeronautical Chamber of Commerce of America and its show manager, Cliff Henderson, who has directed the industry's most successful exhibits during the past year. It is said that St. Louis is to be considered as a possible site for the show in 1931.

Some of the Notable Exhibits

To the Curtiss-Wright Corporation goes the honor of presenting the largest exhibit ever seen in any aircraft show. Their exhibit included fifteen different planes in addition to aircraft engines and accessories. Afloat in the center of a miniature lake was the Keystone-Loening Commuter, a new four-passenger cabin amphibian developed by the company. Grouped around this lake were the Curtiss-Tanager, winner of the $100,000 Guggenheim Safe Aircraft Competition; the Travel Air Mystery Ship; and the Kingbird, an eight passenger twin-motored plane recently developed by Curtiss. The Curtiss Condor, the Carrier Pigeon II and the giant Keystone Patrician, also exhibited by the Curtiss-Wright Company, attracted much attention.

The new Ryan Foursome, exhibited by the Detroit Aircraft Corporation, was unveiled for the first time. A duplicate of the new Lockheed Sirius, recently purchased by Colonel Lindbergh, was also on exhibit as well as two other Lockheed-Vegas and an Eastman Flying boat. The company exhibited eight planes manufactured by its various units.

The Detroit Gull, a primary training glider, and the first to be granted an approved type certificate by the Department of Commerce, was also exhibited.

One of the exhibits attracting much attention is the new cabin plane introduced by the Stinson Aircraft Corporation of Wayne, Michigan. A radical reduction in price on the new plane was announced. Formerly offered at $10,500, the new plane with a 210 hp. Lycoming engine is now available at $5775. This new plane has many of the refinements of design found in more expensive aircraft, such as electric starters, dual control, sound-proof, heated ventilated cabins, adjustable steel propeller, brakes, hydraulic shock absorbers, and luxurious interior trimmings.

The announcement made at the Show was the first made since the Stinson Company became a division of the Cord Corporation, with E. L. Cord, as president.

American Eagle exhibited a new four-passenger cabin monoplane, powered with a Wright Whirlwind, 165 hp. This new model is said to possess unusual inbuilt comfort and visibility for a cabin plane.

A new product of the Waco Aircraft Corporation, a three-passenger plane powered with a 100 hp. motor, was shown, in addition to the two Waco sport trainers which won the last two Ford Reliability Tours.

The feature plane in the Stearman exhibit was the new Stearman Business Speedster, showing much more efficient stream lining than its predecessor.

Two new models, the Davis D-1 and the Davis DI-E, the first powered with a LeBlond 65 hp. radial motor and the second with a 90 hp. Kinner motor, were exhibited by the Davis Aircraft Corporation.

The American Aeronautical Corporation exhibited a Savoia-Marchetti open-cockpit amphibian of the same type now in use by the New York Police Department. This was the first time the amphibian had been exhibited in the Middle West.

Included in the Bellanca exhibit was the "Columbia" in which Clarence Chamberlain crossed the Atlantic. The Bellanca "Pacemaker" was also on exhibit at the show.

A speedy new Fleetster exhibited by the Fleet Aircraft Corporation attracted much interest from those interested in fast planes. The new ship of monocoque design with special built cowling and a Pratt and Whitney Hornet motor is said to be capable of a top speed of 200 miles per hour, making it one of the fastest commercial planes in the world.

Premier and latest model aircraft also were shown by the following manufacturers: Aero Corporation of America, American Aeronautical Sales Corporation, Earl Aircraft Corporation, Great Lakes Aircraft Corporation, Heath Airplane Company, Lincoln Aircraft Company, Mohawk Aircraft Corporation, Mono Aircraft Corporation, New Standard Aircraft Corporation, Pitcairn Aircraft Corporation, Spartan Aircraft Corporation, Stabilaire, Inc., Szekeley Aircraft and Engine Company, and the Whittelsey Manufacturing Corporation.

Exhibits of Motor Manufacturers

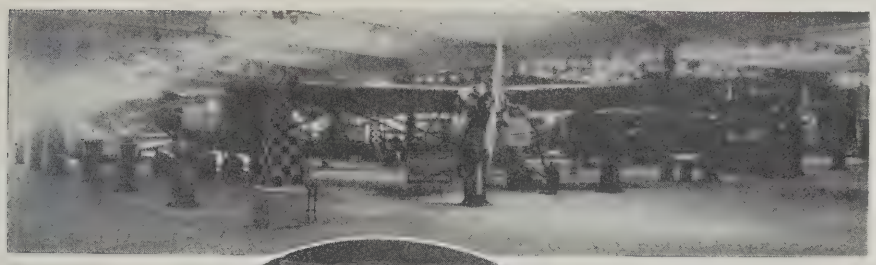
Engines ranging from 30 to 625 hp. were shown by the various engine manufacturing concerns, bringing out the refinements in aircraft motors made during 1929. One engine weighing only 1.08 pounds per hp. was on display. The average weight per hp. of the engines exhibited was 2.36 pounds.

One of the most complete engine displays ever shown anywhere by a single manufacturer was exhibited by the Wright Aeronautical Corporation, builders of many record-breaking motors. The three types of J-6 Whirlwinds rated at 165, 225 and 300 horsepower were shown. A Cyclone, 525 horsepower, was also in the display as well as the four-cylinder Gipsy of 90 horsepower.

Motors were exhibited by sixteen different man-

(*Continued on page* 22)

Some of the Elaborate Exhibits Which featured the International Aircraft Exposition

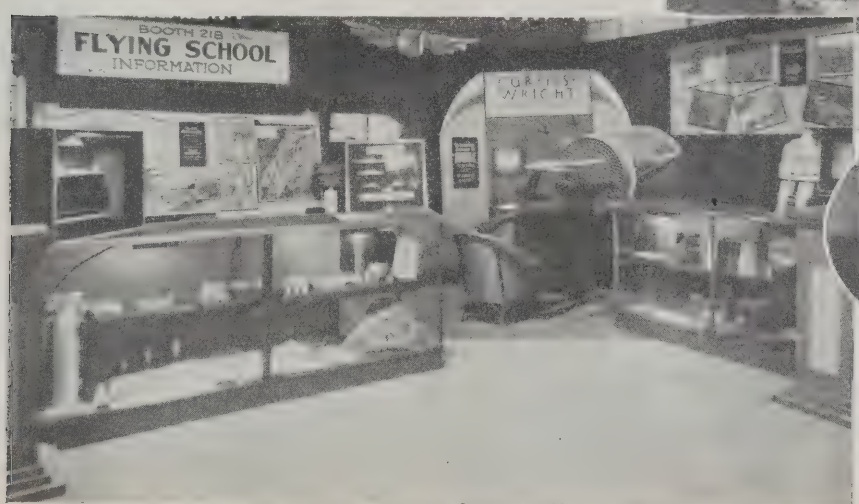


At the left is a glimpse of the attractive exhibit of Detroit Aircraft Corporation, with the new Ryan Foursome, made by the Ryan Division, shown in the foreground. All photos by Wings Photo Service.

At the left is shown a portion of the exhibit of Aero Supply Mfg. Company.

Above, the elaborate exhibit of Bendix Aviation Corporation. At left, display of Luxor Goggles by E. B. Meyrowitz, Inc.

At right, an elaborate setting was used to call attention to the advantages of Stanavo Aviation Engine Oil.



Above, a glimpse of the exhibit of Macwhyte tie rods. At left, a corner of the attractive booth of Curtiss-Wright Flying Service.

Analyzing the Exposition from *the Marketing Viewpoint*

By Robert M. Burtt

PRACTICALLY every member of the aviation industry came to the International Aircraft Show recently concluded at St. Louis, Mo., with one principal thought in mind. Aircraft and engine manufacturers, operators of air transport lines, accessory companies and general operators, all were equally concerned with the answer to one major question: How can we sell airplanes and air transportation to the public?

The latter part of the question is the least troublesome. Passengers are coming forward to engage passage on air liners in very encouraging numbers. In fact, with the reduced rates prevailing at the present time most air transportation companies cannot accommodate the demand. If that is so this time of the year, what will the situation be in the summer?

The problem of the air line company now appears to be merely one of devising ways and means to properly take care of this business. That done, the passenger cost per mile will be reduced and the public will have been rendered far better service, thus increasing the popularity of this mode of travel. Frequency of trips was the suggestion most often heard at the show, and undoubtedly before the year is over an air line schedule will be seen on routes where traffic has been severe, calling for several trips per day instead of the single one in vogue heretofore.

On the other hand, the public have not stampeded aircraft salesrooms. So far they have not even shown much inclination to buy, at least not on any scale that would encourage the manufacturer or dealer. This vexing topic was the subject of conversation wherever a group was found on the arena floor. Scores of meetings were held among the trade in the hope of evolving plans to increase sales.

It was about the middle of the summer in 1929 that the clarion call sounded forth for more and better salesmanship. Pilots could fly, it was said—and still is said, for that matter—but they could not sell. It was quite possible to teach a salesman to fly but pilots could not be taught salesmanship. The statement was made by one well-known sales manager that if the average automobile dealer were to fire his force of salesmen and replace them with the same number of aircraft salesmen picked at random from various exhibits on the arena floor, he would go broke in about two months. Others thought this was too harsh an indictment. At any rate, there seems to be a real demand for better selling in the industry. No doubt, the acquisition of better trained personnel in this department will be accompanied by more orders. There is a great hue and cry on for supersalesmen.

There were others that did not agree with this view. One prominent sales manager was the author of the statement that it took years to accumulate the necessary knowledge about aircraft and flying to instill confidence in the prospect. In fact, the widest variety of opinions on almost every subject was heard from various members. However, the general consensus of opinion on the subject of selling was that pilots had not been able to put over the job, so of necessity the specially trained salesman was going to be given a chance.

There was a noticeable air about the show that augurs well for the industry. Leaders of the industry were getting to the point where, in most cases, they had given up kidding themselves. Instead of closing their eyes and proclaiming that everything was going fine, they admitted to themselves and to each other that the situation was not satisfactory. That being the case, what was wrong and what could be done to remedy it?

This is the kind of an attitude that is going to get the industry somewhere. Recognizing the presence of an ailment, there is but one logical procedure: That is to diagnose the situation, analyze it, understand it, if possible, and then, and only then, can remedies be proposed that have a chance for success. This, the industry, to its credit, has been doing at the St. Louis Show. Everyone has gotten down to serious thought. By the time the next national show is at hand it can safely be assured that some general conclusion will have been drawn and concrete remedies will be working that will materially better the situation.

How and where are airplanes going to be sold in 1930?

Discussion brought out the fact that there are two general markets for airplanes. The first was in the industry itself. Included in this potential market is everyone that buys an airplane to make money with it in some kind of aircraft operations—air transport lines, taxi service, flying schools and similar outlets. It is admitted that this market is pretty well supplied at the present time.

The heaviest purchasers in this market will be the transport lines. They will have to replace equipment and, if present heavy traffic conditions prevail, will have to purchase additional ships. Most of these, however, will be the larger carrying-capacity planes from six-place jobs up. For example, during the show the Curtiss Aeroplane and Motor Company sold three Curtiss Condors to the Transcontinental Air Transport for approximately $270,000.

What about the smaller ships? Most dealers and distributors are supplied with ships now. The indus-

Some of the Many Recent Airplane Models Exhibited at the International Aircraft Exposition

Right: The Great Lakes Trainer, exhibited by the Great Lakes Aircraft Corporation. Below: The new Lockheed Sirius, duplicate of the plane recently delivered to Col. Charles Lindbergh, displayed by the Detroit Aircraft Corporation.

Below: The Gipsy Moth model 913M with folding wings and Handley Page slots, exhibited by Moth Aircraft Corp. On the left below is the Eastman Flying Boat exhibited by Eastman Division, Detroit Aircraft Corp.

Right: The Travel Air Mystery "S", holder of all speed records for commercial planes, was exhibited by Curtiss-Wright.

Upper left: One of the exhibits of the American Eagle Aircraft Corporation, a Kinner powered biplane. Lower left: The Fairchild 71, displayed by Fairchild Manufacturing Corporation of Farmingdale, L. I.

try is over-produced. There are many new and slightly used airplanes stored around in various parts of the country awaiting the purchaser. These will have to be absorbed before new planes from the end of the production line can be delivered. The criticism was heard everywhere that the factories were doing their jobs but that the sales departments were not keeping pace. One of the best rejoinders voiced to this was that the engineering departments had designed plans for pilots but not for the public.

The consensus of opinion is that there will be comparatively little merchandise, at least new production ships, sold to the operations end of the aviation business in the spring of 1930. Where, then, is the industry going to look for possible outlets to take care of what they have on hand now, and to keep their factories busy during the year? There is only one answer—the development of the private market. What is the private market?

Developing the Private Market

The private market is made up of those who purchase planes, not to make money with in some kind of aviation operation, but for use entirely outside of the field of the industry.

The private market purchases planes for three reasons: The first is for sport or pleasure; the second is for business, and the third a combination of both. When anyone purchases an airplane for pleasure he must be sold enough on the pleasure of flying to be willing to pay so much per year for indulging in such a hobby, just as he would if he owned a yacht or a string of polo ponies. In catering to his fancy he can spend all the way from $1000 to $100,000, depending on whether his taste runs to gliders or a 20-passenger four-motored seaplane. The general feeling is that this market has hardly been scratched so far. It is felt that the greatest handicap to the development of this market is the airplane itself.

This group divides itself into two parts. First, those who can afford to hire a professional pilot to fly their ships for them. Second, and the potential size of this class dwarfs the first, those that purchase planes with the idea of flying the plane themselves. Before this second division of the market can be developed to the point where the volume is worth while the airplane is going to have to be made easier for the layman to fly.

It was also pointed out that this market is the one tremendous group where the vast multitude of planes are going to be sold in the future. Unless planes in large quantities are sold to this class the aviation industry as a whole will face a difficult situation in that there will be a market only for the products of the few factories necessary to build planes for the air transportation companies and the flying schools who are training professional pilots.

The basic cause of the failure of the general public to buy airplanes has been hinted. It represents much serious thought on the part of those whose business success, in fact their very existence, hangs in the balance. The way to a possible solution is pointed. It looks as if the manufacturing end of the industry will build for two markets: One the field of air transport; the other that of the professional pilot regardless of what use he makes of the plane. In either case the ship is being flown by an operator who is specially trained for his job and who does enough flying constantly to make him perfectly safe to fly the type of ship, in general, which we have at present.

Aeronautical engineers will devote their time to devising an airplane suited to the vast private market. It can be done. There is not the slightest question about it. Airplanes have been made more difficult to fly in the past 10 years. In striving for high performance it was inevitable that the landing speed should increase. We have commercial planes today that land as fast as pursuit planes. The average private pilot will not fly such a plane because he realizes that a forced landing might prove disastrous.

What is the answer? Will it be a plane something like the Curtiss Tanager or will it be a sort of combination of glider and plane? There is one thing that is absolutely certain. Whatever shape or form it takes it is going to have a landing speed of around 15 or 20 miles an hour. If this can be combined with a fair degree of high speed when the desired altitude is reached, so much the better. But the low landing speed is basic.

The sensation of the show as far as the public was concerned was the radical reduction of price in the products of certain companies. From this point of view the four-place cabin Stinson powered with a 210 hp Lycoming engine seemed to capture the cream of the interest. It was priced at $5775, fly-away Detroit. Another plane that attracted a great deal of attention was the Sport Command-Aire, with the same power plant, at $5676. It is a three-place open cockpit plane. Such prices represent reductions of from $3000 to $4000 over ships of similar performance a year ago—to say nothing about many minor refinements in appearance and comfort which were not to be found at that time.

Some Optimistic Comment

A general feeling of optimism prevailed. That the industry had vitally important problems that had to be solved was recognized. It was felt, however, that the solutions would be found.

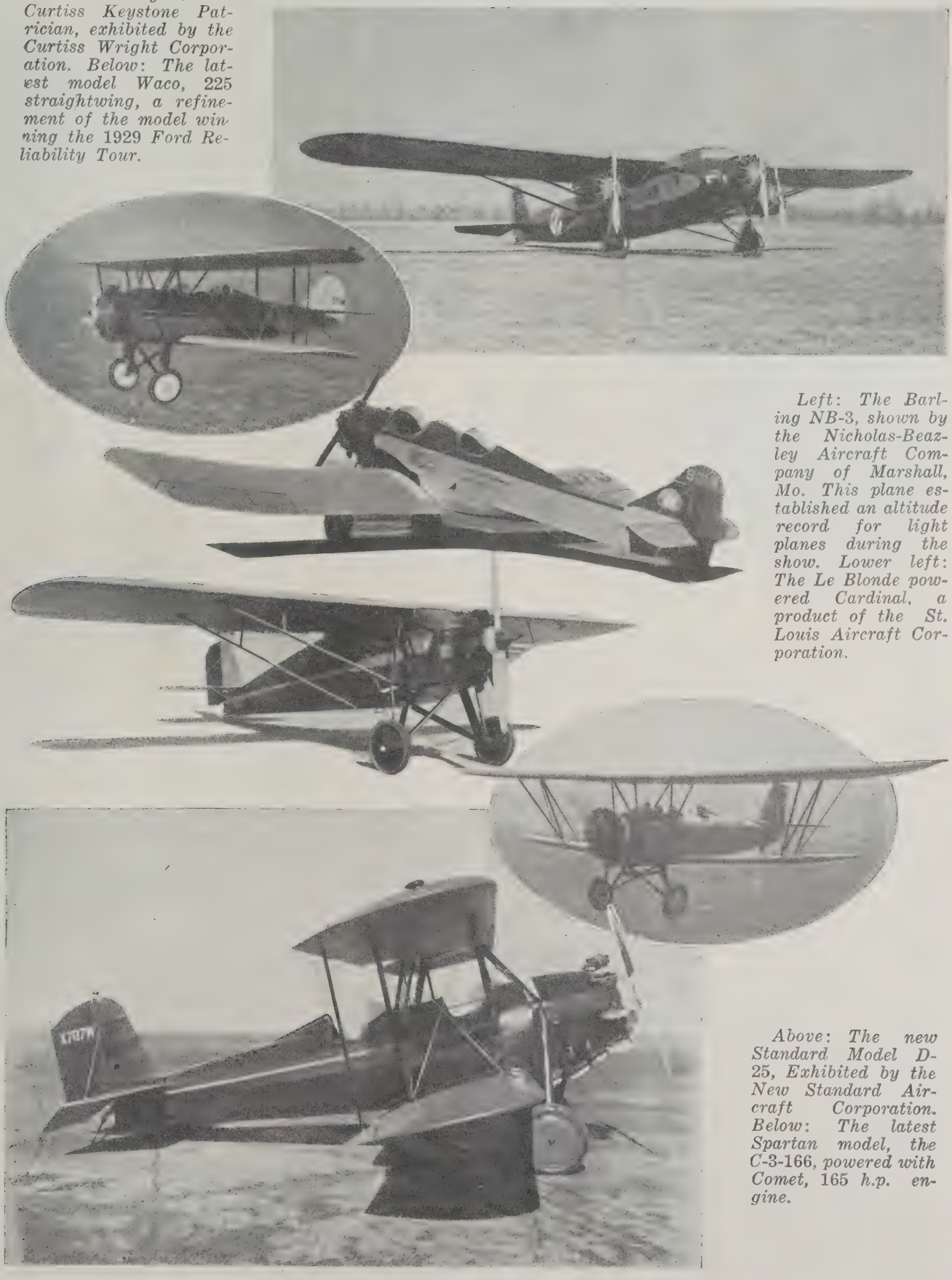
Mr. R. G. Snowden, president of Command-Aire, Inc., said: "I look for a somewhat larger number of planes to be sold to the private market in 1930 than in 1929. Prices are reduced, there are more airports, and better service facilities prevail everywhere."

W. Brainey, of Spartan Aircraft Company, remarked: "99 per cent of potential airplane purchasers are executives of successful businesses. Their duties largely confine them to the 'down town' districts of the city or town in which they are located. In any event they are not to be found loafing around an airport. Airplane salesmen and pilot-salesmen then, it would seem, could most profitably devote their time to becoming acquainted in the executive districts of the cities visited."

(*Continued on page* 22)

Greater Speed and Added Refinements Featured Many of the New Models Exhibited at the Exposition

To the right: The Curtiss Keystone Patrician, exhibited by the Curtiss Wright Corporation. Below: The latest model Waco, 225 straightwing, a refinement of the model winning the 1929 Ford Reliability Tour.



Left: The Barling NB-3, shown by the Nicholas-Beazley Aircraft Company of Marshall, Mo. This plane established an altitude record for light planes during the show. Lower left: The Le Blonde powered Cardinal, a product of the St. Louis Aircraft Corporation.

Above: The new Standard Model D-25, Exhibited by the New Standard Aircraft Corporation. Below: The latest Spartan model, the C-3-166, powered with Comet, 165 h.p. engine.

At right, Pan American plane ready to take off from Miami terminal building. Below, Col. Lindbergh arriving at Miami on the initial flight over the Pan American route to South America.

Operations of a 14,000-Mile

The Development and Operation of Pan American Airways

THE Pan American Airways, Inc., holds a unique position among the foremost aviation lines in the country in that it is a pioneer in more than one direction. Its marvelous growth within the short period of two years is but an example of the possibilities of commercial aviation.

It was in October, 1927, that the first Pan American foreign route was opened up. The course was ninety miles long and operated between Key West and Havana. Naturally the service was limited. Two tri-motored 7-passenger Fokker planes were used in the initial undertaking.

Today the Pan American system comprises more than fourteen thousand miles of airways as compared with ninety of the first route. It is the largest unified system of airways in the world. A fleet of sixty multi-motored air liners flies over these lines daily. Their course carries them through twenty-six foreign countries. Most of the ships carry United States mail—last year more than 400,000 pounds were carried—while contracts have been awarded the company for carrying foreign mail. Between Miami and Havana, for instance, the average amount of mail carried is now more than a ton each day. During the past year Pan-American air lines flew more than two and a half million miles.

Through linking the three Americas, North, Central and South the Pan American Airways system has rendered a notable service not only to the United States but to the other countries involved. Whereas it formerly took several weeks to have mail transmitted from some points in Central and South America to the United States or to neighboring cities in the same country, several days at most are now required to communicate with the most distant spot touched by the new airmail service.

Not alone is the airmail service beneficial to trade with these foreign countries, but the passenger service as well is helping very materially to speed up business. Whereas it formerly required weeks and perhaps months to make the rounds of these countries, it can all be done now in the space of a few days.

The airports established by the Pan American are modern and of the best type to be found. In many cases the only airport in a locality is that of the Pan American.

While the first airport of the Pan American was at Key West it was not long before Miami became the headquarters for the southern traffic, and here, in November, 1928, was the first airport of entry to be established by the United States government. This is still recognized as the most complete international airport in existence, and it has one of the highest ratings of any airport in the countrq. It covers 300 acres. Two hangars 125 by 125 feet in size, costing approximately $25,000 each to build, and one hangar 120 by 100 feet costing about $35,000, house the planes operated by this airways

At left, the customs office in the Miami terminal building of Pan American Airways, whose operations are described in detail in the accompanying article

By
E. W. Sudlow

Airway System

system, the shops for repairing motors and parts and the radio construction shops. There are also a compass orientation building, a motor testing station and a weather bureau.

The $100,000 passenger terminal is most complete. As this airport is a port of entry, there are U. S. immigration and U. S. public health departments for clearing incoming passengers. Baggage is inspected here. A service rendered by the Pan American that is much appreciated by the passengers is the serving of tea in the waiting room while the customs officers are performing their duties. This is merely one of the many things done by the Pan-American system in the effort to have their guests leave them with a smile of satisfaction as the happy details of the trip are recalled.

In addition to housing the general offices of the company and the U. S. Customs offices, the passenger terminal has several restaurants on the second floor. There is the charming French room where meals are served, or the jolly little Spanish tavern if one prefers to eat here. And it is becoming quite the thing in Miami for hostesses to entertain at the airport. A party visits the airport to watch he incoming or outgoing planes, and then eats in one of the restaurants; or a game of bridge may be enjoyed on the balcony overlooking the great white field. Advance arrangements are made for parties and, to the hum of the giant motors, many gay gatherings are held.

While some offices are maintained in this terminal, the main offices are in the down-town section of Miami. A fleet of motor cars is always in readiness to transport passengers or guests from the city to the airport, a distance which is covered in fifteen minutes.

These are, of course, substantial reasons for the ability of the Pan-American Airways to maintain established time schedules. It has been the policy of the company to offer no schedule until it had been thoroughly tried and tested and in operation for a sufficient length of time to prove that it was practical. Pilots have become familiarized with the routes and it is known positively that the proposed schedule can be maintained.

At the present time fourteen airliners fly daily between Miami and Havana. It takes 135 minutes to make the trip. One airliner makes the round trip daily between Miami and Nassau. Three times each week an airliner leaves Miami for Cristobal, with stops at Havana, Cozumel, Belize, Tela, San Lorenzo, Managua, Puntarenas, David and Panama City.

Two airliners fly daily from Panama City to Cristobal and return and one airliner between Panama City and David.

Between Brownsville, Texas, and Tampico and Mexico City, Mexico, the Pan American system has daily service, extending three times weekly to Cristobal, with stops at Vera Cruz, San Jeronimo Tapachula, Guatemala City, San Salvador, San Lorenzo, Managua, Puntrens, David and Panama City.

Cristobal and Curaco are tied together with one airliner weekly. Once a week an airliner connects Cristobal with Buenos Aires and Montevido, reaching points in Columbia, Ecuador, Peru and Chile.

Thus the cities of South America are brought closer to those of North America. Faster mail transportation is now possible and all this must result in closer and more friendly relations between the various countries concerned.

Many inter-city trips are made so that a traveller, whether on business or pleasure bound, may fly

Arrival of first air mail from Buenos Aires to Miami via Pan American Airways

from one point to another along the route as his needs require.

A very great part of the experimental work designed to increase safety in flying has been in the field of radio. By no aviation organization anywhere has more gratifying success been attained in developing radio communication during flight than by Pan American Airways, Inc. This line's notable efficiency in operating regular mail and passenger lines has been aided immeasurably by a highly developed system.

Pan American pioneered constant two-way radio communication between planes and land stations. The planes are at all times in touch with at least two ground stations. The transmitting range of the plane sets is 800 miles, and the receiving range is 1200 miles. Col. Charles A. Lindbergh on his recent tour of the circle through the West Indies, along the northeast coast of South America and back to Miami by way of Central America and Cuba, was always in direct instantaneous communication with the Miami station by way of the only two-way high frequency radio communication system in use on aircraft in the world.

Radio compasses at the company's ground stations enable the stations to report to the planes at all times as to their exact position, latitude and longitude. A radio range finding system perfected by Pan-American engineers also is used to keep the planes on their course at all times.

Pan American has a radio building program which includes 71 ground stations, of which 32 are already completed. The total cost of this radio system will be $1,500,000. The most recently completed ground stations are those at San Julian, Cuba; Port of Spain, Trinidad, and Guatemala City, Guatemala. The company now employs 43 operators, but its plan of operation when the system is completed will require the constant services of between 300 and 350 operators.

Not long since Otto Merkel, managing director of the Deutsch Lufthansa, Europe's greatest airline, after inspecting this system, said that America has far surpassed the rest of the world in aviation radio development.

Each time a plane is made ready for use its radio equipment is thoroughly tested before it leaves the airport. Communication with the airport station is established while it is still in sight, and from then on at regular intervals throughout the entire trip the operator checks the ship's position and receives weather reports from the ground.

The Pan American system maintains its own meteorological station. No longer is it necessary for a pilot to guess as to what he is about to encounter in the way of weather. Reports are sent him via radio constantly while en route and he knows exactly what to look for. This has meant much in the matter of safety and also in maintaining the set schedules.

A Fleet of Sixty Airliners

While two years ago the Pan-American Airways was operating two tri-motored 8-passenger Fokkers, today it has a fleet of 60 airliners. Fokker tri-motors are still used—super-F, 10 monoplanes, 1260 horse power, carrying 12 passengers and a crew of four. Two new 40-passenger giant Sikorsky flying boats have been ordered.

Col. Charles A. Lindbergh, who is chairman of the technical committee of the Pan American Airways, laid out the entire foreign route of the company, over which each day some thirty airliners are in scheduled flight. Each airliner carries a crew of four—pilot, co-pilot, radio operator and steward.

That the established schedule is efficient is proven by this statement: During the year 1929 more than two and a half million miles were covered by Pan American airliners with 99.7% adherence to schedule.

During the coming year, without a doubt, the mileage will be more than doubled. Passengers are increasing daily for the countries of the West Indies. During 1929, 11,000 persons flew between Miami and the countries to the south of the United States.

Pan American has established a combined railroad and airplane service operating between every ticket office of any size throughout the country and Miami. Transportation is made by rail to Miami, thence by

The Pan American Airways radio station at Miami keeping in direct touch with an airliner

private motor car to the airport, and via airliner to the port of destination. Combination tickets are purchased, and these may include hotel and other service.

It is now possible for $890 to provide a cruise of twenty-day duration, starting from any point east of the Mississippi and return. The best of everything is provided in the way of train service, hotels, etc. All this is possible in such a short period because the long trips between various places are made by airplane. Many shorter combination trips are offered. This plan is bringing the "personally conducted European trips" right home, and countries heretofore thought to be inaccessible except to those with unlimited time and means at their disposal are now available to everyone.

The total investment of the Pan-American Airways in its Miami terminal and airport is close to $3,000,000. This is exclusive of the planes, each of which costs anywhere from $50,000 to $75,000. More than 300 persons are employed in Miami alone, and this number is rapidly expanding.

Linking the Latin American countries to North America as it has by means of this system of airways is a great step forward for the commercial interests of this country. Because transportation facilities were lacking to a large extent before the Pan American Airways entered the field, many of the interesting spots were unknown to the tourist, while the commercial possibilities had only been vaguely estimated by the business man. Now it is possible to reach them by traveling over the established air routes.

The Sales Problem

(*Continued from page* 8)

facturer relying on public consumption.

What is the solution? The merging of companies manufacturing different types of aircraft may solve the difficulty. Another possible solution is the formation of independent national sales organizations, handling the sales of one type of plane in each class.

The existing conditions must be faced and sales organizations and production schedules governed accordingly. The public is rapidly becoming "air-minded," but not as quickly as the optimism of the industry anticipated. A public that yesterday regarded the airplane with awe and suspicion, cannot be expected to consume the output of over 165 manufacturers, today.

Statistics will show that sales this last year to the private owner comprise only about 8% of the total airplanes sold, and sales to the pilot-owner only about 2%. At a glance, these figures might seem discouraging, but when one considers the fact that the industry has only been in existence, as an industry, for just one year, these figures bear a different significance. While sales this last year will not nearly approach the amount predicted at the beginning of the year, they will show a tremendous increase over the sales of the preceding year.

The public is gradually beginning to realize that airplanes are not "infernal machines" that suddenly, without cause, plunge to the ground. They no longer consider a person a fanatic who dares to fly in one. Engineers are daily developing safer planes that require less skill to operate. Motors are being perfected. The number of airports is increasing at an astoundingly rapid rate. All of these factors will broaden the scope of the usefulness of the airplane. Sales will increase accordingly, but these developments cannot be accomplished in a day—nor a year.

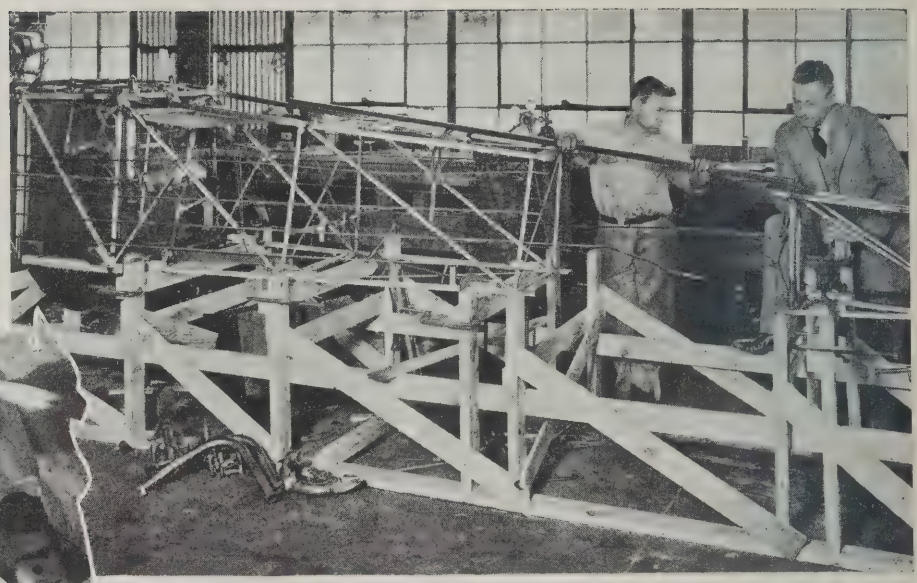
It is an economic law that any practical contrivance that saves man time, must become a necessity in the chain of progress. The airplane travels more quickly than any other means of locomotion, and therefore cannot be denied its place in civilization.

New Course in Aviation at Vanderbilt University

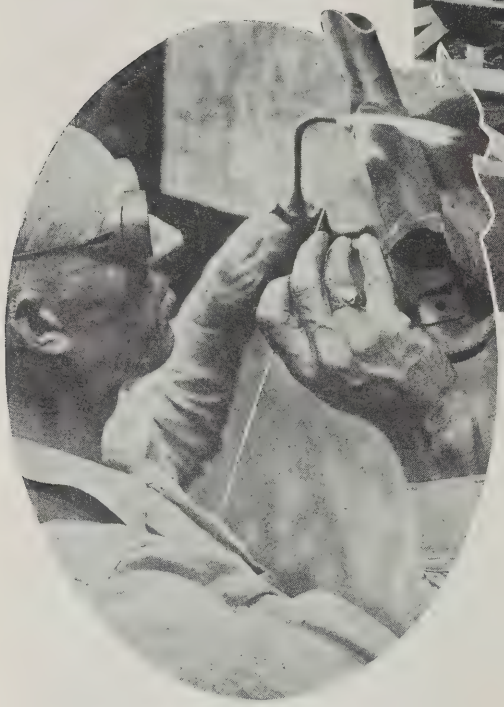
A course in aviation has been included in the latest catalog published by Vanderbilt University of Nashville, Tennessee, to be offered students of the Junior and Senior classes through arrangements made with Interstate Airlines, Inc., at Tennessee's Sky Harbor.

The course will include ground school work with instruction in theory of flight, aerodynamics, and other phases of pre-requisite training, and flight instruction will be given by Interstate pilots at Sky Harbor, the city's new air terminal 23 miles southeast of Nashville, on the Murfreesboro pike.

Passengers ready to leave Miami on a comfortable Pan American Air Liner



Accurate rebuilding of damaged fuselage is possible with the excellent equipment in the Southern Aeromotive Shops. Below: Welding a damaged landing gear.



SERVICING

Fourth Article in Series on Southern Aeromotive Service

WHEN Southern Aeromotive Service built its new main overhaul plant at Dallas, Texas, facilities were installed to enable the complete rebuilding of three airplanes a week.

The number is not imposing to the uninitiated—but the capacity is about as large as that of any present-day airplane factory

And the S. A. S. airplane plan is designed as a unit; infinite expansion may be based upon this initial layout. It is an adjunct of the new motor overhaul plant, built adjoining the Southern Air Transport hangar at Love Field.

The Dallas shops are reproduced on a smaller scale by Southern Aeromotive Service at New Orleans. The New Orleans and Dallas plants are said to be the only ones in the United States offering complete aviation motor and airplane overhaul. In addition to this, many of the individual phases of their service are obtainable nowhere else in the South and in the Southwest.

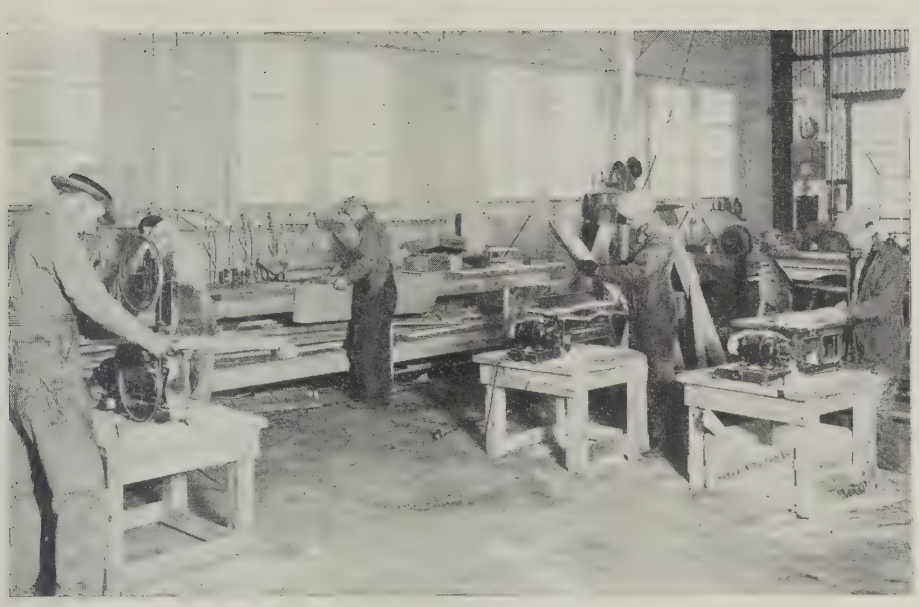
Like the motor overhaul plant, the airplane overhaul plant is the product of the organization genius of H. B. (Pete) Taylor, general manager of Southern Aeromotive Service. Originally, both motor and airplane overhaul were intended to service the fleets of air mail, passenger and student planes operated by Southern Air Transport and its divisions, including Texas Air Transport, the mail carrying line, but with the growth of Southern and Southwestern aviation, there appears a demand for work on behalf of commercial aviation at large that but for Southern Aeromotive Service could be obtained only at the airplane and motor factories.

Rendering service comparable to that of the factory, Southern Aeromotive Service also is unique in that it is equipped with facilities and manned by personnel capable of handling both motor and ship, whereas as the industry now stands these two indispensable elements of aviation are more or less independent of one another in the manufacturing stage.

Fifty men are employed in the Dallas airplane overhaul plant. About half of them are from different airplane factories, their distribution of former employment being fairly representative of the entire industry. Most of them are specialists.

"To the employment in aviation overhaul work of specialized workmen I am more and more committed," Taylor said. "It's a lot more valuable to the employer to have a plant full of specialists than to have a plant full of all-around men. In the first place, the all-around man is sure to be shifted all around the plant, and he does not have the opportunity of perfecting his talents in the particular job for which he is most apt. In the second place, it is harder to gauge the amount of work that a given manpower can produce, if the manpower consists of jacks-of-all-trades.

"The specialist knows what he can do and it is possible to find out his capacity. And from these capacities and the nature of the job, it is possible to



To the left: A busy day in the wing rebuilding section of the Southern Aeromotive Shops. H. B. (Pete) Taylor, below, believes in employing workmen who are specialists in a particular line. Below: Slipping the fabric over a rebuilt wing in the S. A. S. Shops

WINGS and BODIES

By P. E. Bryant

determine the number needed for the work and also to what extent the number can be overloaded. All this aside from the obvious fact, that the specialist can and will study his job more than the all-around man possibly can, and that he will be enthusiastic about it and jealous of his ability to handle it."

In the airplane plant, naturally, the all-around workman has to make a big straddle to cover the extremes of tasks, which range from welding to wood-working, from metal shaping to spreading and sewing canvas, repairing and creating upholstery and applying paint and cover dope.

The organization of an airplane overhaul plant automatically falls into well-marked divisions. These will be sheet metal and welding; woodworking, and cover, paint and doping. Rigging is done in any of the main subdivisions. Special jigs on which fuselages are held are set up in the welding plant.

The principal management secret of operating an airplane overhaul plant is preventing it being filled up with ungainly structures needing only small repairs.

For this reason, General Manager Taylor has seen to it that the entrance to the Southern Aeromotive plants is so small that it is almost impossible to get a fully set-up airplane through. If the ship is in one piece and a general overhaul needed, it is taken apart in the hangar before it is received in the overhaul plant.

If only a small repair is needed on the airplane, it is attended to by the service crew in the hangar and does not enter the overhaul plant at all.

"Having a nice big doorway," Taylor said, "is handy for the mechanics. They can just roll the

old ship in and fix it in the easiest way, where the light is good and where all the tools and dope are at hand. But it's not so good on the books. If we had bigger doors in our overhaul plant, it would be full of airplanes all the time, but it's very doubtful whether the average work done on them would pay for the floor space occupied.

"So we take them apart before we start; we don't have any congestion and we are always able to load up to capacity."

Southern Aeromotive Service equipment in its airplane overhaul plants at Dallas and at New Orleans is so complete that it is not necessary to send out any job of wood—or metal-working, and every operation in the building of any airplane is provided for.

However, the plant does not completely rebuild ships, because of the Department of Commerce ruling which permits restoration only when the damage or destruction does not exceed 50 per cent.

S. A. S. is equipped and sufficiently skilled to make new wings, but does not contemplate replacing wings completely washed out, because to do so it would be necessary to furnish the department with working blueprints and stress analysis. It is cheaper to buy a new wing.

The same policy would be adopted, Taylor said, if it were necessary to replace an entire set of ribs. However, S. A. S. is ready to manufacture and install individual replacement ribs and is equipped to make them of wood or metal, shaping the aluminum or duralumin in its own plant.

Cowling is regularly rebuilt as well as repaired, however, in the S. A. S. sheet metal shop, which has bending irons and all other equipment of an up-to-the-minute sheet metal plant.

Every possible machine needed in woodworking for airplanes is to be found in that branch of the airplane overhaul plants operated by S. A. S. These machines can make any spar or rib. The company keeps a large stock of spruce on hand at all times.

"I guess it's about the only stock of spruce in this part of the country," Taylor said. "I tried all over the South a couple of months ago to buy some spruce and finally had to go to the state of Washington for it."

Metal construction of fuselage skeletons is reducing the airplane market for spruce, although great quantities of this material are still in demand. The next most conspicuous use of the fine, light wood, is in ladders.

The cover, dope and paint shop, in which upholstery operations also are carried out, gets most of the overhaul work. Many of the airplanes turned over to S. A. S. do not require extensive mechanical repairs, but practically all get into the cover division. For safety's sake, whenever a ship has cracked up with any considerable force, the cover is entirely removed, to make possible a thorough examination and search for hidden injuries, and, of course, this cover has to be completely replaced.

The plant is nearly always authorized to go the limit in putting a ship back into first class condition and, in fact, nothing else would be tolerated.

International Aircraft Exposition

(*Continued from page* 10)

ufacturers who represent 95% of the motor manufacturers in the aeronautical industry. Included in the display were engines manufactured by Axelson Machine Company, E. W. Bliss Company, Comet Engine Corporation, Chevrolet Aircraft Corp., Continental Aircraft Engine Company, Curtiss Aeroplane & Motor Company, Inc., Dayton Aeroplane & Engine Company, Kinner Airplane & Motor Corporation, Lambert Aircraft Engine Corp., LeBlond Aircraft Engine Company, Lycoming Manufacturing Company, Pratt & Whitney Aircraft Company, Michigan Aero Engines Corp., Szekely Aircraft & Engine Company, Warner Aircraft Corp., and Wright Aeronautical Corporation.

Three types of engines were displayed by Curtiss: the Conquerer, a 12-cylinder, Vee type, rated at 600 hp.; the Challenger, a six cylinder, radial air cooled developing 176 hp., and the D-12, a 12 cylinder, Vee type, water-cooled engine rated at 435 hp.

The Bliss Jupiter, a foreign-designed motor from England, was displayed cut-away to show operations.

From the Marketing Viewpoint

(*Continued from page* 14)

Barton Stevenson, Mono Aircraft Company, said: "There are two big markets—wealthy firms and private owners. The biggest handicap we face today is the fear of flying in the mind of the public. Sell the idea of flying to the business and social leaders in every community and the rest will follow."

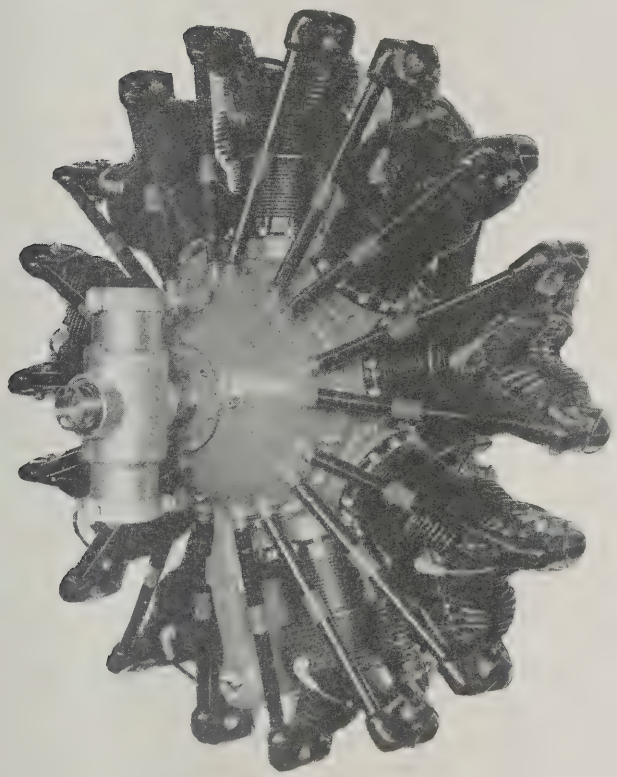
"The first thing to do," said Ray Brown, district manager for the Detroit Aircraft Corporation, "is to find out whether or not the prospect can economically operate an airplane in his business. If you think he can't, don't ever bother interviewing him. Your time and his will be wasted. Then, if the answer to the question is in the affirmative, decide which plane in your line is the best one adapted to his needs. If at the end of the year he discovers that the airplane has not been of economic value to him, selling him in the first place was a mistake. He won't be a prospect for another plane and the chances are that he will be a knocker for aviation."

"There are many firms that can own and operate an airplane with profit to themselves," said Roy E. Russell, assistant general sales manager of the Fokker Aircraft Corporation, "Many of this type of prospect will be sold in 1930. Air transportation will increase. New markets will be developed."

Walter Beech, president of Curtiss-Wright Sales Corporation, said: "I look forward into 1930 with a great feeling of optimism. I believe business will be good. Our companies will sell many ships despite some unethical practices going on in the industry. However, history will repeat itself, and companies guilty of such conduct will automatically eliminate themselves, which will be a good thing for the industry inasmuch as it will stabilize conditions and allow the fundamentally sound companies to reap their just rewards."

The Lubrication *of* AIRPLANE ENGINES

By H. L. Kauffman
Consulting Lubricating Engineer



Pratt & Whitney Wasp Series C

SINCE aviation has become a subject of widespread interest the writer has received many inquiries in regard to aircraft lubrication—what kind and grade of oil should be used for the lubrication of a particular type of engine; what external parts require hand oiling and with what kind of oil; with what type of engine a blend of castor and mineral oil is preferable for use; and similar questions. Of course, the lubrication of the engine of an airplane is extremely important, for without effective lubrication the engine will fail.

Before entering upon any discussion of aviation engine lubrication it will be well to mention briefly the various types of such engines.

Based on the design and arrangement of the cylinders with respect to the crankshaft, there are three general classes of airplane engines, namely, (1) the rotary type; (2) the fixed radial type; and (3) the in-line or linear type.

In the rotary type the cylinders revolve around a fixed crankshaft. The cylinders are located at equal angular distances around the crankshaft.

In the fixed radial type of airplane engine the cylinders are stationary and the crankshaft is the revolving element. The cylinder spacing, however, is equi-angular just as in the rotary type.

In the in-line or linear type, the cylinders are located in line as in an automotive engine. A "vertical-type" engine is one in which only one row of cylinders is involved; a "vee-type," one in which there are two linear rows; a "W-type," one where three rows of cylinders are involved to form an inverted arrowhead; an "X-type," one in which two "vee-type" engines are set with one inverted.

The radial, the vertical and the vee-type engines are at present the most popular designs in the United States.

Rotary Engine Lubrication

The rotary is the type of engine that necessitates the use of castor oil or of a mineral oil heavily blended with castor oil for securing effective lubrication. In most engines of this design the gasoline passes through the crankcase, where it comes in contact with the lubricating oil, before entering the combustion chamber. For this reason it is necessary to use a lubricant, such as castor oil, that is immiscible with gasoline; otherwise, the lubricant would be so diluted by the fuel as to make effective lubrication impossible.

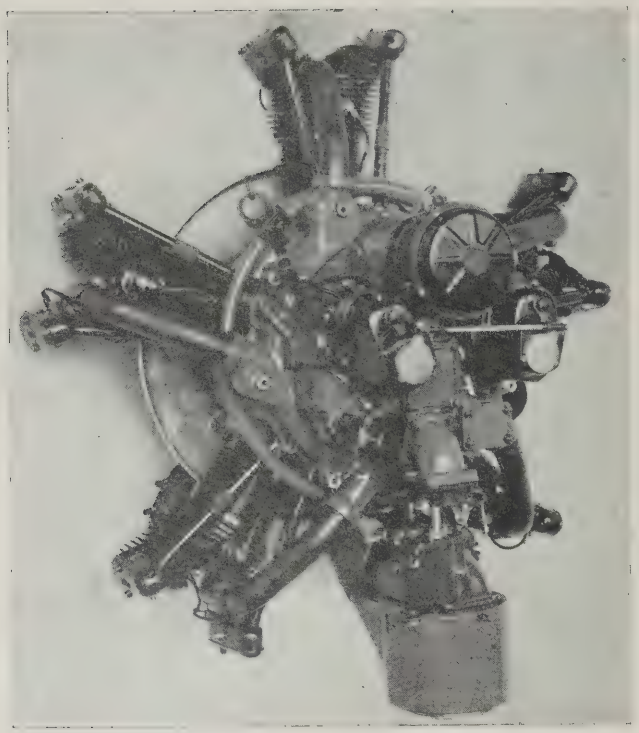
Lubricating systems of rotary engines are usually of the "all-loss" type—all the oil being used up in its course through the engine, since no provision is made for its recirculation. The oil is pumped to the main bearings, crank connections and cam gears, from which point lubrication of piston pins and cylinder walls is accomplished by the action of centrifugal force on such excess oil as passes through the pressure-lubricated bearings. For reasons that are self evident, oil consumption in rotary-type airplane engines is very high.

Radial Engine Lubrication

In engines of the radial type all moving contact surfaces except ball bearings, pistons and valve-operating mechanism are commonly lubricated by full pressure. The ball bearings and pistons are generally lubricated by splash.

The Wright "Cyclone" and "Whirlwind" engines are used by so many of our present-day airplane manufacturers that a description of the lubrication system used with these engines will give the reader a better idea of how one manufacturer of air-cooled, radial type engines is getting oil to all the rubbing parts.

But first let us have in mind a little more clearly



Wright "Whirlwind" five-cylinder, 165 horsepower, fixed radial, air-cooled engine

the general design and operation of this type of engine, and, for purposes of illustration, we will take a Wright "Whirlwind Nine," the cylinders of which are arranged around a central crankcase and crankshaft. The cylinders do not revolve around the shaft, and the crankcase has but one shaft whereas most automobile crankshafts have a crank for each cylinder. The connection between the pistons in the cylinder and the crankshaft is by means of connecting rods, but by a method quite different from automobile practice. In the automobile each connecting rod goes direct from the piston to a crank on the crankshaft; but in the Wright "Whirlwind" engine only the master connecting rod (from the piston in cylinder No. 1) connects directly with the crankshaft. The other rods are joined by knuckle pins to the big end of the master rod, which is larger than the other rods. The complete assembly of the connecting rods and pistons is connected by the customary wrist pins.

Operation is on the four-stroke cycle principle, similar to the modern automobile engine. Each cylinder fires every other revolution of the crankshaft, the four strokes occurring in the following order: (1) Intake stroke, which is a downward stroke of the piston with the intake valve open, thus drawing a fresh charge of vaporized gasoline into the cylinder; (2) Compression stroke—an upward stroke of the piston which compresses the charge; (3) Power stroke—when the piston is near the top dead center, the charge is exploded by the spark plugs. The expanding gases force the piston down to the bottom of the cylinder and the resulting power is communicated to the crankshaft through the system of connecting rods already described. (4) Exhaust stroke, which is the second upstroke of the piston. The exhaust valve is now open and the burned or exhaust gases are forced out. This completes the cycle. The "Whirlwind" engines have two separate and complete ignition systems, each cylinder having two spark plugs, fired simultaneously by separate magnetos. If one plug or even one ignition system fails, the other will explode the gas.

With the foregoing in mind, now for a brief description of the method of lubrication.

Lubrication is provided by a pressure pump which carries oil to the front and rear of the hollow crankshaft, from which points it is distributed to various bearings under pressure. The excess oil from all parts of the engine drains into a sump located in the main crankcase casting between the bottom cylinders. From this sump a single suction pump delivers the oil to the main oil tank in the airplane, passing it through a strainer installed at a convenient point outside the engine; the strainer removes any foreign matter which may have found its way into the lubricating system. Oil pressure is regulated automatically by an adjustable valve. The lubrication system has been designed to eliminate entirely all external oil pipes on the engine, as these have been found liable to leakage and have proved unsatisfactory in service due to excessive chilling of the oil in cold weather.

Radial airplane engines are made with from 3 to 11 cylinders, the number depending upon the intended horsepower. Where cylinders are arranged in a single bank and served by one crank connection, all cylinders equi-angularly, the number must be odd. Advantage in the use of radial engines lies in the fact that they have a low weight per horsepower, are readily adaptable to air-cooling, have a relatively short length, can be easily mounted or detached, and have easily accessible valves and cylinder heads. A disadvantage is the high wind resistance which they offer, by reason of their frontal area.

Although, as previously mentioned, full pressure lubrication is employed in the modern radial engine —just as in the modern automobile—unlike automotive practice, such engines usually operate with a dry sump; that is, the oil is not accumulated in a crankcase or sump as a part thereof (though it is kept in constant circulation through the engine), but instead is removed by suitable scavenger pumps and led to an outside tank where it is cooled and recirculated by a gear-type oil pressure pump. The value of the dry sump method of lubrication lies in the fact that thereby is eliminated the possibility of uncovering of cylinders with oil when a plane must bank, climb, loop or dive.

Linear-Type Engine Lubrication

In linear-type or in-line engines cylinder arrangement will depend upon power requirements. Vertical arrangement is suitable for four or six cylinder engines, but vee-type arrangement is preferable when power requirements demand the use of eight or more cylinders. In such engines, a 45, 60 or 90 degree angle may be employed, one crank being provided for each pair of cylinders in the same cross plane. The

12-cylinder Liberty engine is an example of an engine with a 45 degree vee, but there are other twelves with a 60 degree vee, just as there are eights with a 90 degree vee.

The Wright "Gipsy" engine is outstanding as an example of a four-cylinder-in-line air-cooled engine. Its general appearance and operating principles are air cooled, and ignition is by two independent magnetos. The engine rotation is right-handed.

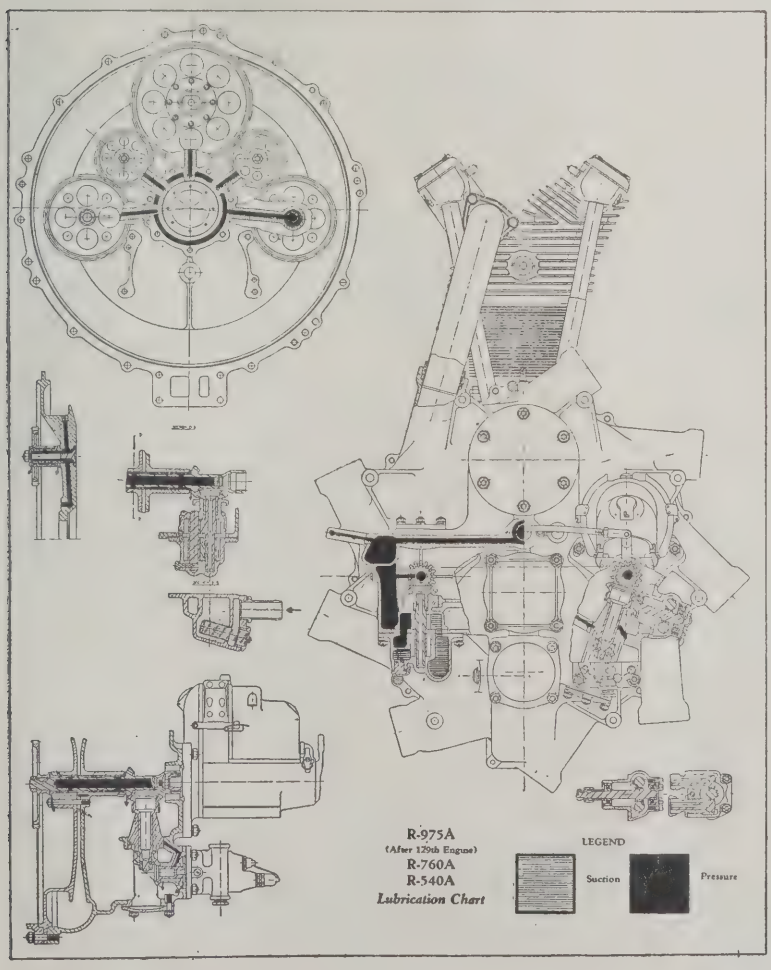
This engine utilizes the full-sump method of lubrication. Over two gallons of oil are carried in the sump at the bottom of the crankcase, which amount is sufficient for 15 hours' flying. There is no external oil tank. A filler cap in the nose of the crankcase provides means for adding fresh oil, and a drain plug in the bottom of the sump allows for draining old and dirty oil.

The engine is lubricated under pressure by means of a gear-type pump driven from the crankshaft and located in the timing-gear cover. This pump forces oil from the sump through an adjustable pressure relief valve to the pressure oil filter. The filter contains a second release valve which operates when the pressure becomes excessive, thus preventing the oil screen from being damaged by cold thick oil or a dirty screen. From the bottom of this filter the oil passes to a gallery connected by passages in the crankcase to each of the five main bearings. A small pipe at the rear end of the gallery supplies oil to the timing gears, a connection in this pipe leading to the oil pressure gauge. From the main bearings oil is forced into the hollow crankpins, and reaches the big end bearings at a pressure of 30 to 40 pounds per square inch. Small holes in the crankpins allow an oil spray to escape onto the cylinder walls.

This system maintains positive lubrication of the cylinder walls and pistons, as the quantity of oil reaching these parts is not affected by wear and slight play in the main bearings. Camshaft bearings, tappets and cams are also lubricated by the oil thrown out by the crankpins. The surplus oil drains down into the sump, passing through a gauze filter tray, which provides a second check in the elimination of dirt or other foreign matter from the oil.

Both the pressure oil filter and the oil pressure relief valve are readily removed from the bottom of the sump for cleaning and adjustment. The quantity of oil in the sump is ascertained by means of the oil depth gauge provided. In order to assist in the cooling of the used oil before its return to the pressure pump for further service, the bottom of the sump is provided with external fins over which is deflected a current of air during flight.

Packard aircraft engines are 12-cylindered, 60-degree vee-type. The lubricating system is of the full-pressure, dry-sump type, with a triple gear oil pump mounted in unit with screen in lower half crankcase, screen extending full length of oil pan to protect scavenging pumps. The system operates at a pressure of 75 to 100 pounds per square inch.



Lubrication chart for Wright Whirlwind

In any dry sump system, a considerable volume of oil must be available in order to obtain effective lubrication, the volume required depending to some extent upon the size of the engine and its intended flying period. With the Packard engine an oil--storage tank is provided having a capacity of from 1-10 to 1-12 that of the gasoline tank. In the average aircraft engine the rate of oil circulation ranges from 2 to 6 gallons per minute.

Requirements of Engine Oils

All the major oil companies are doing much research and investigational work at the present time, and have been doing so for many months, on aviation engine oils. This intensive study has been due to the fact that aircraft engines present some distinct problems of lubrication. For example, in no other type of mechanism do we have to accomplish lubrication when clearances are so extremely low as occur within certain types of sleeve or plain bearings of aviation engines; nor under conditions where superchargers are operating at such exceedingly high speeds. And, as is commonly known, without effective lubrication, which means protection of all the wearing

elements of the engine and such accessory equipment as the magneto and the supercharger, aircraft engines not only could not develop the power and speed that they now do, but airplanes would not be able to reach such performance records for flying time, distance and speed.

The essential characteristics of airplane engine oils can be summarized as follows:

1. The oil should have as low a tendency as possible to develop gummy or other residues that might clog the lubricating system and hinder the free circulation of the oil.

2. It should be of such pour test as to flow freely at whatever the temperature exists in the external oil tank.

3. It should be able to withstand abnormal change in viscosity or fluidity under prevailing operating or starting conditions.

4. It should show a relatively low per cent of carbon on the carbon residue test.

Specifically, what do aircraft-engine manufacturers recommend in the way of oils to be used on their particular engines? Here is what the Wright Aeronautical Corporation told this writer:

"We should like to make clear that we do not recommend any specific oil by name for use in our engines. We have listed in some of our older instruction books a number of oils that have been found to be satisfactory, but this system is being discontinued and we are recommending only oils that meet a certain specification without mentioning such oils by name."

And these are the specifications to which lubricating oil for the Wright Whirlwind engines shall conform:

1. The flash point shall not be lower than 400° F.
2. The viscosity for summer use shall be 90 to 105 seconds at 210° F. and, for winter use, shall be 75 to 85 seconds at 210° F.
3. The pour point for summer use shall be less than 45° F. and, for winter use, shall be less than 150° F.
4. To neutralize one gallon of oil, not more than 0.10 milligrams of potassium hydroxide shall be required.
5. The oil shall separate completely in one hour from an emulsion with distilled water at a temperature of 180° F.
6. The carbon residue shall not exceed 2.5 per cent.
7. The precipitation number shall not be greater than 0.
8. The oil shall be derived from a petroleum base and shall be free from fatty oils, resin, soap, and other compounds not derived from petroleums.

The viscosities of airplane engine oils are higher than those of oils used in the average automotive engine, and for the following reasons:

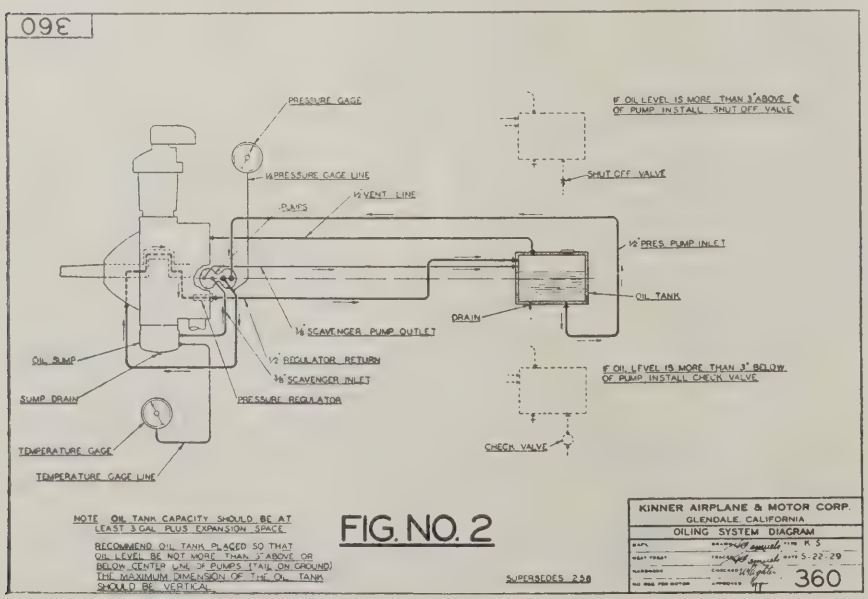
1—Higher engine temperatures, on the average; 2—The necessity for service under higher pumping pressures; 3—The desirability of keeping oil consumption to a minimum, so that the amount of oil carried may be reduced.

Frequency of Oil Changing

In general, engine manufacturers advise a change of oil after each 20 hours of service. Naturally, on long distance flights where the plane may be in the air from 25 to 50 hours this is out of the question; but then it must be remembered that the average flight is only of from 5 to 10 hours duration.

Why must the oil be changed? It does not exactly "wear out," but it does become contaminated with several per cent of heavy ends from the fuel used, and with carbon particles; to a lesser extent, also, with metallic particles and dust—the latter coming chiefly during the testing of the plane on the ground, and during starting and landing. Incidentally, when the oil is protecting the wearing surfaces as it should, the metallic particles contained therein will be very small.

Domestic aviation gasoline has a maximum allowable end point of 274° F. Most companies sell a product that is well within this end-point specification. It is therefore readily evident that oil dilution is much less in aviation engines than in the average automotive engine, where heavier fuels are used and where operating temperatures are lower. On the other hand, airplane engines frequently require priming with gasoline and this will tend to increase the initial rate of dilution of the oil system.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PRESSURE GAGE
IF OIL LEVEL IS MORE THAN 3" ABOVE C OF PUMP INSTALL SHUT OFF VALVE
SHUT OFF VALVE
½" PRESSURE GAGE LINE
½" VENT LINE
PLATE
½" PRES. PUMP INLET
OIL TANK
DRAIN
⅜" SCAVENGER PUMP OUTLET
½" REGULATOR RETURN
⅜" SCAVENGER INLET
OIL SUMP
SUMP DRAIN
PRESSURE REGULATOR
IF OIL LEVEL IS MORE THAN 3" BELOW OF PUMP INSTALL CHECK VALVE
CHECK VALVE
TEMPERATURE GAGE
TEMPERATURE GAGE LINE
NOTE OIL TANK CAPACITY SHOULD BE AT LEAST 3 GAL PLUS EXPANSION SPACE
RECOMMEND OIL TANK PLACED SO THAT OIL LEVEL BE NOT MORE THAN 3" ABOVE OR BELOW CENTER LINE OF PUMPS (TAIL ON GROUND) THE MAXIMUM DIMENSION OF THE OIL TANK SHOULD BE VERTICAL
FIG. NO. 2
SUPERSEDES 258
KINNER AIRPLANE & MOTOR CORP.
GLENDALE, CALIFORNIA
OILING SYSTEM DIAGRAM
DATE 5-22-29
360

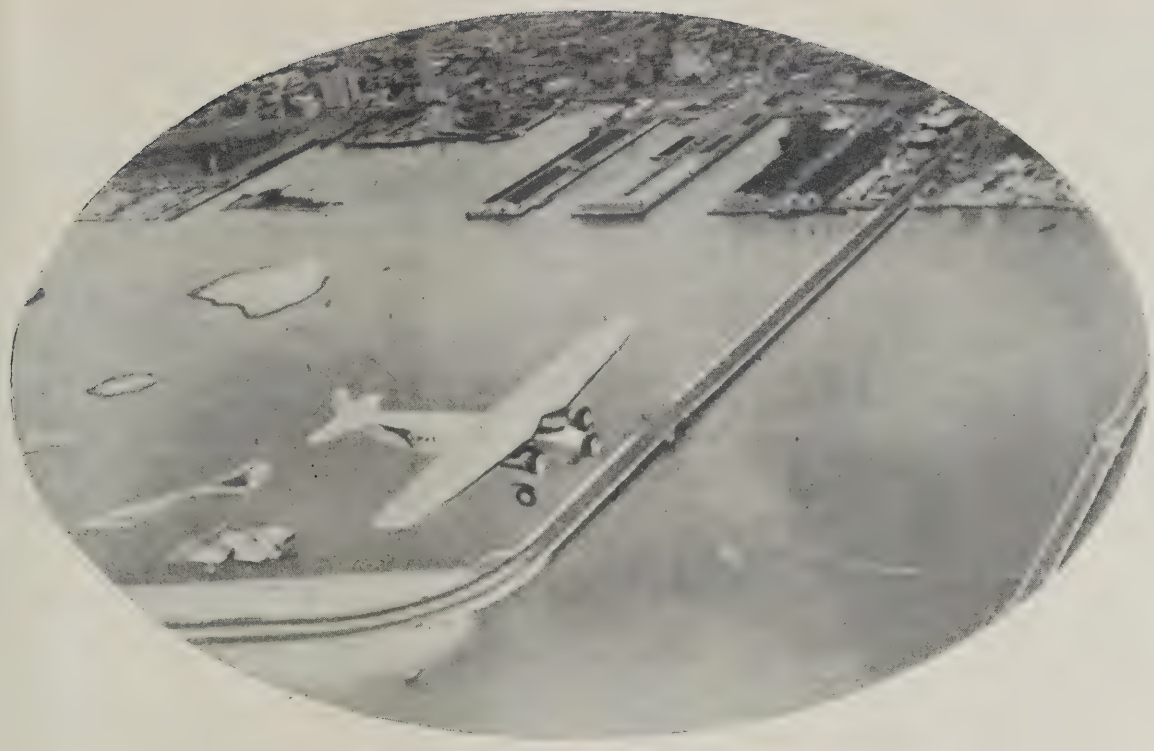
Lubrication chart for Kinner K-5 motor

Low oil pressure is not necessarily an indication that the oil is not sealing the pistons properly, or is not a good lubricant; for it may result from one or more of the following conditions:

Excessive oil temperatures may result from the use of the incorrect grade of oil, or oil of inferior quality, but it may also be due to other conditions.

1. Dirt in the oil screen.
2. Leak in the suction lines.
3. Oil pump not primed.
4. Improper setting of the relief valve.
5. Excessive bearing clearance.

In a concluding article, other factors involved in the effective lubrication of aviation engines will be discussed, as well as the lubrication of other parts of aircraft.



Pan American airliner arriving at Miami

Problems *of* International Flying

By Clarence M. Young

Assistant Secretary of Commerce
for Aeronautics

THE subject, "Problems of International Flying," presupposes international flying. It would seem in order, therefore, to refer briefly to the existing status of such flying, and perhaps gain an indication of what may be anticipated in the way of its further extension. Apparently it is the latter—the trans-oceanic services—which will involve the major problems.

For the past ten years air transport organizations have conducted international services in Europe. They have been developed to the point where nearly every major country has been linked into the aerial highway system, including India and Africa. They have become so much a part of the general transportation scheme of Europe as to be almost indispensable. Therefore, it may be said that international flying in Europe has long since become an established fact and an economic necessity.

Within the past three years international flying on the American Continent has likewise become a matter of major importance. American air transport organizations are now operating scheduled services into Canada, Mexico, Central and South America, to Cuba, the West Indies and the Bahamas, transporting passengers, mail, and merchandise. These operations are being constantly extended, and, as in Europe, are proving to be so necessary in the general scheme of things that they, too, are rapidly becoming a prime necessity in our further business intercourse and better international relationships.

In establishing and conducting these services there have, of course, been unusual circumstances to meet and difficulties to overcome. Thus far, however, they have not been insurmountable, and remarkable progress has been made. Europe has had certain advantages because of the proximity of various countries, and because of the absolute necessities in the premises; also, because most of the major countries became adherents to an international Convention soon after the war, and thus eliminated some of the political and diplomatic difficulties which might otherwise have arisen. However, the fact remains that American organizations now operate over some 11,500 miles of airways in contiguous countries, maintaining approximately 58,000 miles of scheduled services each week and that extensions thereof are being made as rapidly as circumstances permit, or the desirability becomes apparent.

Assume, then, that suitable progress continues in the further establishment and operation of international services on either side of the Atlantic and Pacific Oceans, there remains the necessity for linking them together—by trans-oceanic air lines that world-wide air transportation may be complete.

An address by Major Young before the aeronautical meeting of the Society of Automotive Engineers, Miami, Fla., January 14, 1930.

The obvious question is—will it be accomplished, will transoceanic services be realized? If so, when? The future alone holds a definite answer. Personally, I feel sure that it will, and that we shall eventually see such services, reliable in character and certain in operation—perhaps within a decade. In any case, it is here that the more serious problems arise.

Three groups seem to suggest themselves as of major importance.

First: The type of equipment to be employed, including not only aircraft but ground facilities such as radio and communication services, weather reporting systems, intermediate landing points, navigation equipment and aids, operating personnel, etc.

Second: International agreements, including customs, entry and clearance, airworthiness phases, the definite separation of military and civil operation, etc.; all of which make necessary a general recognition of international controlability in a manner comparable to shipping, but which partakes of certain elements not akin to shipping.

Third: The economics involved—the operating expense, the essential offset in the matter of transportation rates, and the resultant business potentialities.

There are doubtless many other difficulties which will become manifest; but if the three just named (and not necessarily in the order of their importance) are disposed of, then the service is assured.

Aircraft and Equipment

Obviously, any type of aircraft which is employed must provide a payload capacity consistent with the operating cost. In any transoceanic service it must also be capable of sustained flight of unusual duration. And this is true even though certain intermediate landing facilities may be provided. With present type equipment, therefcre, it seems apparent that—for the future, relative near future at least—such service will probably be limited to dirigibles rather than airplanes—except, of course, in short water crossings such as are involved between North and Central America where the airplane has already proven its practicability. Airplanes have, of course, successfully accomplished non-stop ocean trips, but at least they were an extraordinary operation and the load in each case was limited to the fuel, crew, and equipment; whereas dirigibles have already transported substantial payloads, and such loads will be materially increased in the larger types now being built. Even now a survey is being made by an American organization interested in the establishment of transoceanic services with dirigibles, and there is reason to believe that it may be undertaken in due course, at least in an experimental way.

Doubtless, airplanes will also be developed to the point of practical usefulness in such a service. Intermediate landing and servicing facilities will probably be required, but even these are being experimented with in the form of "floating islands" equipped with radio, hangars, machine shops, and other necessary devices. As a matter of fact a scale model has been satisfactorily tested, and a full-sized unit is now under construction for practical demonstration purposes.

It seems reasonably certain that aircraft, suitable for transoceanic and other sustained flight service, is within reach and will be made available.

Of equal importance, however, are the necessary ground facilities, such as radio communication for weather service and navigation purposes. These do not present serious technical difficulties. Radio communication between aircraft and the ground is an established fact and is being accomplished daily in a practical way. Radio range beacons which lead a pilot to a definite objective are in the same category. Navigation, while perhaps requiring modified calculations because of speed and other phases not usually encountered, is nevertheless governed by the same fundamentals as in any other case. And an adequate weather reporting system can be organized with the knowledge and facilities now available.

Given the aircraft to negotiate the required distances suitably, the remaining necessities for the operating phase will be forthcoming without delay.

Operating personnel, while an immediate problem, can be trained for the various duties involved. The element of time is the apparent essential. The captain of a large dirigible loaded with passengers and merchandise assumes a definite responsibility; so also does the captain of a large passenger liner. Doubtless the steamship companies encountered a similar situation in the early stages of their operations. They overcame it, and the air transport organizations will do likewise.

International Cooperation

Aircraft require certificates of airworthiness; and airmen, certificates of competency. Different countries have varying requirements and it has to some extent presented complications. However, it is a matter which is gradually leading to a satisfactory adjustment. As previously stated, a number of European countries adopted what is referred to as the "International Convention of 1919." Some of the South American countries also became parties to it. The United States participated in the deliberations preliminary to its adoption but did not ratify it or become adherents, for a variety of reasons, which seem adequate. The Convention has been of assistance in the development of international air transportation in Europe, because among other things, it set up certain uniform requirements and regulations.

In 1926 a Pan American Conference was held in Washington. It dealt with general matters but a specific reference was made to aviation with the result that a preliminary "Pan American Convention" was formulated. This included a substantial portion of the 42 articles of the International Convention of 1919, but was sufficiently modified to be more readily adaptable to current and anticipated operating conditions and customs in the Pan American countries. In 1928 another Pan American Con-

(*Continued on page* 48)

News of the Southern AIRPORTS AND AIRWAYS

Atlanta to Birmingham Service Inaugurated

AIR passenger service between Atlanta and Birmingham was inaugurated by the Davis Airlines, February 15. Prior to the opening of the new service a group of notables from Birmingham were flown over the route by officials of the Davis line. On the following day a group of leading Atlanta citizens headed by Mayor I. N. Ragsdale, of Atlanta, were flown to Birmingham in the company's new Travel Air cabin planes.

One of the company's ship was christened "City of Atlanta" and the other "City of Birmingham," on the opening day.

Formal service was opened on Saturday, February 15, when planes leaving Candler Field, Atlanta, and Roberts Field, Birmingham, took off simultaneously at 8:00 o'clock.

One round trip daily will be made from each city. Both planes will make five-minute stops at Anniston. Service will be operated daily and Sunday with Curtiss Robins and Travel Air Speedwings available to handle overflow crowds. Tickets will be on sale in Atlanta at company headquarters at Candler Field and at downtown headquarters in the Piedmont Hotel. In Birmingham they may be had at the Thomas Jefferson Hotel.

Fare between Birmingham and Atlanta is $15, with $6.50 between Birmingham and Anniston and $8.50 between Anniston and Atlata.

The schedule provides for planes going east to leave Birmingham at 8 a.m. and 3:30 p.m., arrive at Anniston at 8:35 a.m. and 4:05 p.m., with a five-minute stop, and arrive at Atlanta at 9:30 a.m. and 4:45 p.m. The morning plane will connect in Atlanta with the Interstate plane for Chattanooga, Nashville, Evansville, St. Louis and Chicago, the latter point to be reached at 5:30 p.m.

Westbound the schedule provides for a departure at 8 a.m. and 3:30 p.m., arriving at Anniston at 8:40 a.m. and 4:10 p.m., stop five minutes, and arrive in Birmingham at 9:15 a.m. and 4:45 p.m. These planes will connect with the Delta line west to Tuscaloosa, Meridian, Jackson and Monroe, La.

Express rates are 20 cents per pound with a minimum charge of $1. Bus service is provided from each field.

A folder recently issued states that after April 1, time of departure on the afternoon run will be changed from 3:30 o'clock to 4:30, from both Birmingham and Atlanta.

The line is the first of a series planned by the Davis Company. Plans are under way for the establishment of an Atlanta to Macon and an Atlanta to Jacksonville line, and also an Atlanta to Memphis line.

Night Air Mail Service Over Chicago-Atlanta Route

Night air mail service, which will start soon over the air routes operated only in daylight at present by Interstate Airlines, Inc., will give business houses routing their mail through Chicago and other points as far as Atlanta, the southern terminus of the Interstate Lines, direct connection with lines running into Central and South America, according to the Interstate Airlines traffic department which has been busy the past several weeks working out schedules for the night mail.

Plans are nearly complete for the erection of an airway radio station at Tennessee's Sky Harbor, the new airport near Nashville, and planes to be used on the night runs are being equipped for night flying.

Airport Developments in Alabama

MAJOR developments in aviation have taken place in Alabama recently. Chief of these was the voting of a $1,000,000 bond issue by the city of Birmingham for a municipal airport. The 300-acre site has already been condemned, the bonds will be sold in March and work commenced soon thereafter.

The city of Mobile has under consideration the improvement of Bates Field at an approximate cost of $40,000.

The state securities commission has approved application of the National Airways System, of Peoria, Ill., to issue preferred and common stock valued at $25,000 for the development of an airport at Decatur, Ala. The airport is located at Leslie Field and the dedication was scheduled for March 10. S. F. Tannus, president of the National Airways System, Inc., announced that both local and cross-country flying service will be maintained and a training school operated at Decatur.

The Davis Airlines, Inc., on February 15 inaugurated a 90-minute passenger and express service between Birmingham and Atlanta.

Architects are now drawing plans for the hangars and administration building to be erected for the Birmingham airport.

The site was selected with the cooperation of the Department of Commerce.

A group of Divis Airlines officials, left to right: George Shealy, L. J. Sauerborn, John F. Gill and H. L. Prichard

Administration Building at Love Field

SPONSORED by the Aviation Department of the Dallas Chamber of Commerce some of the most complete and most modern airport facilities in America have just been added at Love Field, Dallas, Texas. Finishing touches are rapidly being given the Dallas Airport Utilities Corporation's new administration building and hangar at the local airport. When the new improvements have been completed an "at home" party and celebration will be staged by Southern Air Transport, Inc., lessee of the new airport properties, according to announcement of P. D. Lampert, assistant operations manager for S. A. T.

The new administration building is of concrete and steel construction and was completed at a cost of $40,000. The ground floor of the building contains a large foyer and lobby with modern office suites on either side for officials of the transport companies that are to occupy and use the Love Field port.

In addition to the offices of air transport companies, the building is equipped with ticket office, Western Union and Postal Telegraph offices, radio operation rooms for Station KGUF of the Southern Air Transport, and traffic and weather departments.

The new concrete and steel hangar at Love Field, representing an investment of $100,000, is said to be the most modern and complete in America. The entire plant is built to comply with the specifications of the National Fire Underwriters Association and most compartments of the hangar are heated by a circulation system that eliminates all fire hazards. The repair shops are equipped to completely rebuild and overhaul both ships and motors. Southern Air Transport is lessee of the entire plant and subleases offices and hangars to the other companies housed at the new airport. Companies already located in the new quarters include Delta Air Lines, Braniff Air Lines, Cromwell Air Lines and Southwest Air Fast Express.

Lyle Thro is Dallas branch manager for Southern Air Transport and Phil Lampert is assistant manager in charge of operations.

A new dispatching board installed in the operations office of the Southern Air Transport at Dallas enables operations officials to determine the exact position of planes flying over the company's lines on scheduled flights. Plaques with pilot's name and shop numbers are moved about the board following the movement of the ship, so that at any moment officials can give the location of ship and pilot.

E. A. T. Operations Offices Now in Atlanta

Transfer of the operations headquarters of Eastern Air Transport, Inc., operators of the New York-Atlanta-Miami air mail lines from Richmond to Atlanta, was completed during the latter part of February.

C. H. Dolan, assistant manager of operations for E. A. T., arrived at Candler Field February 16 and made arrangements to receive the men and the equipment which is housed in the new $65,000 hangar recently completed for the company at Candler Field.

AIRMAIL planes of Eastern Air Transport, Inc., operating over the New York-Atlanta-Miami airway, flew a total of 1,286,766 miles in 1929, carrying a total of 463,267 pounds of mail. The routes flown by this company for the Government are 1,572 miles long. Planes fly from New York to Atlanta overnight, and mail posted in New York on one day is delivered the following afternoon in Miami.

Equipment, including reserve mail plane motors, valued at $100,000, is now in Atlanta and all departments allied with operations are to be concentrated in Atlanta soon, including engine overhaul, parts department, purchasing department and instrument department.

Mr. Dolan states that the company's program also calls for the transfer from Brooklyn, N. Y., of the accounting department of Eastern Air Transport as soon as the operations department has time to get settled in the new quarters.

Included among those being transferred to Atlanta at this time are: W. E. McDaniel, assistant to C. H. Dolan; John Ray, head of engine overhaul; W. R. Crippen, Jr., purchasing agent; T. M. Tepleman, manager instrument department, and L. G. Sheldon, manager parts department.

Through Service Starts on New York-Rio Line

FIRST through service over an 8000 mile airplane transport system linking together 16 nations and colonies of the Americas was inaugurated between Miami, Rio de Janeiro, Buenos Aires and Santiago by New York, Rio and Buenos Aires Line, Inc., February 18.

On that day planes left from Santiago, Chile, and from Miami, Florida, 8000 miles apart by this route, cutting travel time to eight days between the United States and Chile, seven days to Buenos Aires, six days to Rio de Janeiro and two days to the northern tip of the South American continent. Weekly service will be operated regularly over this route.

This service, according to W. F. Reynolds, vice president, climaxes two years of pioneering work preparatory to through travel over a great trunk line reaching from Chile over the Andes to Buenos Aires, thence northward to the West Indies through Uruguay, Brazil, The Guineas and Venezuela and over the Spanish Main to Florida. Plans call for later extension northward to New York to provide fast, direct service between the major industrial centers of both continents.

Schedule calls for 21,198 miles of weekly flying. At 14 principal cities complete passenger facilities, equipment for handling mail and express, and overhaul and maintenance stations are being installed. Repair shops in which complete planes and engines can be made over will be located in Miami, Para, Rio de Janeiro and Buenos Aires.

Four giant Commodore seaplanes built by the Consolidated Aircraft Corporation are in use over the line in express service and through mail and passenger service. Originally designed to carry 32 passengers, the first Commodore commercial flying boat was rearranged to carry 20 or more, with roomy accommodations in addition for mail, cargo and freight. The plane has a lounge room, buffet, dressing room and complete toilet facilities. Cabins are larger than pullman compartments and have six-foot head room, wide aisles and full visioned windows.

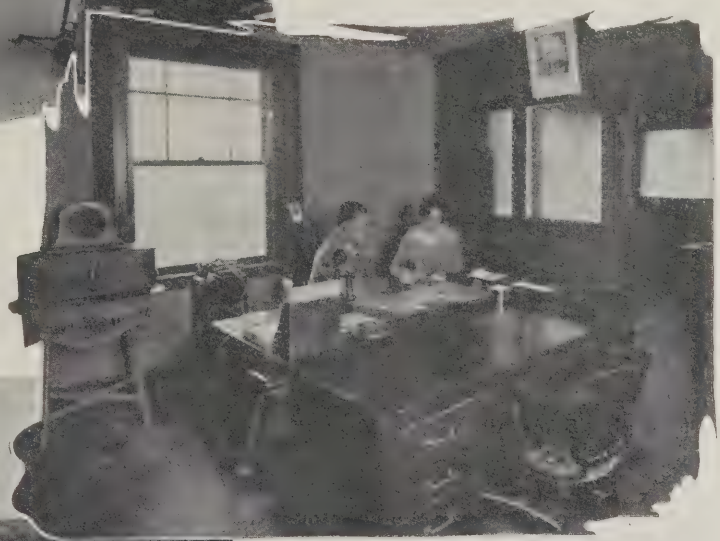
The Southern Aviation and Transport Company, Memphis, has been granted a charter by the state of Tennessee. The corporation is capitalized at 16,000 shares of no par value.

New Administration Building at Love Field, Dallas, Incorporates Modern Airport Facilities

Left: The new Administration building at Love Field, Dallas. Below: Private office of Lyle Thro, branch manager for American Airways.

Left: Mechanics at work in the recently completed and fully equipped repair shops in the new concrete and steel hangar at Love Field.

At the right is shown the private office of Phil Lampert, assistant operations manager for the American Airways. Offices in the new hangar are equipped with latest fixtures.



Left: Some of the wooden hangars built by the Government at Love Field. These hangars are to be replaced with modern steel and concrete structures that will ultimately represent over a million dollars in capital investment.

Improvement Program for San Antonio Airport

WINBURN FIELD, the municipal airport at San Antonio, Texas, will be modernized and rehabilitated at an estimated cost of $250,000 in the event a bond issue sought by the city fathers of the Alamo City is voted upon favorably in a forthcoming election.

Mayor C. M. Chambers announced recently that the quarter-million sum would be included in the bond issue, along with a similar amount that will be used for the widening of one of San Antonio's main thoroughfares, to connect with state highways leading to Randolph Field, the United States army's "West Point of the Air," now under construction 14 miles northeast of San Antonio.

Among a party of aerial enthusiasts who conferred with Mayor Chambers and laid bare the needs for Winburn Field were Brig. Gen. Frank P. Lahm, commanding general of the United States army Air Corps Training Center, with headquarters at San Antonio, and Ed Feille, president of the San Antonio chapter of the National Aeronautic Association.

Feille declared that the time had come for San Antonio to decide if it was to keep up its start as an aviation center or drop out. Gen. Lahm advocated that the time was ripe for San Antonio to get the high tide of the commercial aviation increase or miss it. He pointed out that Winburn Field was now over-crowded, but that it was self-sustaining financially under the present condition.

Feille cited the fact that three aviation companies wishing to have San Antonio as an important center for transportation routes desired to go there at the present time, but that their planes were tri-motored and the hangars now at Winburn Field would not allow them accommodations as the craft would have to be parked in the open.

Tentative improvement plans for the municipal airport, according to Feille, call for construction of a modern administration building, an air depot, ticket office, four new hangars of hollow tile and concrete 120 by 120 feet, concrete aprons, a 30 or 40-room hotel and cafe, additional lighting equipment, weather shop.

The hangar line would be rearranged and facilities would be provided for public health officials and custom and immigration officials, as well as room for a sub-postoffice station.

The acquisition of 100 additional acres of land adjacent to the Winburn Field site also is desired. Local N. A. A. officials were not certain whether this could be accomplished, however, and stated that they may have to be satisfied with 60 acres. The municipal airdrome now consists of 185 acres.

Should the bond issue be passed by the voters of San Antonio, the total outlay for improvement to Winburn Field would amount to approximately $500,000, which would include the original cost, Feille said.

Wayne Parks, superintendent of the municipal airport, declared that the field now has 48 ships there regularly and that passengers must wait in the open in all kinds of weather.

More Improvements for Big Spring Airport

The Big Spring, Texas, airport will soon be equipped with complete radio broadcasting and receiving equipment. With this equipment weather reports will be exchanged between Big Spring and Atlanta, Ga., New Orleans, Brownsville, Dallas, Ft. Worth and El Paso.

The field is electrically lighted with border, obstruction, beacon and flood lights adequate for night flying. The Big Spring landing field contains 230 acres of land slightly sloping and well drained, located within two miles of the city. It is equipped with three steel hangars, 80x100 feet, 60x80 feet and 40x60 feet, and a five-room administration building with telegraph, telephone and restaurant accommodations. Taxi service is furnished to and from the city.

Washington-New York Airline Service

The Baltimore Airways, operator of a passenger service between Baltimore, Md., and New York, plans to enlarge Handler Field, the local terminus of the line. The company also plans to open or inaugurate airplane passenger service to Washington, D. C. Plans for this extension are expected to be completed by April 1. The airline will be hooked up with the Baltimore-to-New York air service, which is now in daily operation. The concern also plans at a later date to extend its service through the South.

Eastern Air Transport Elects Officers

CLEMENT M. KEYS was named chairman of the board of Eastern Air Transport, Inc.. at the regular February meeting of the board of directors, and Capt. Thomas B. Doe, formerly vice-president and general manager, was elected president, it was stated in the company's executive offices in the Sperry Building, Brooklyn, recently.

Eastern Air Transport formerly was Pitcairn Aviation, Inc., and now is a subsidiary of North American Aviation, Inc., of which Captain Doe is executive vice-president. Two contract airmail routes are operated for the Government by the company, one of them between New York and Atlanta and the other from Atlanta to Miami. It also operates an extension of the transcontinental airmail route from New York to Philadelphia, Baltimore and Washington, and a cross-State service in Florida from Daytona Beach to Orlando, Tampa, and St. Petersburg, flying a daily total of 3,500 miles on schedule.

Col. Paul Henderson was named vice-president, while other officers were re-elected. Harold A. Elliott, vice-president and operations manager, was transferred from operations headquarters at Richmond to the Brooklyn office, where he is in charge of all company activities.

Real Hospitality at the Plant City Airport

The little town of Plant Ctiy, Fla., world's largest shipping point for mid-winter strawberries, has a new airport, and what it lacks in aviation equipment, it makes up in courtesy and service.

Air-minded city officials have established a high and dry landing field, two miles from the business district, with 2000-foot runways atop a spoil bank of a phosphate mining pit without hazards or obstacles in miles. A wind sock has been installed and direction markers painted.

Every flier landing there is given a personal welcome by the mayor, city manager and other officials, and the chief of police sees to it that every plane is properly serviced and staked down if an overnight stay is planned.

When 40 planes landed at the field during the recent Florida air tour, Plant City women served strawberries with whipped cream and cake to the visiting airmen.

Plans for Modern Airport at Birmingham

WHEN Birmingham by a vote of more than two and one-half to one endorsed the $1,000,000 bond issue which will provide for the immediate clearing and developing of 300 choice acres of Birmingham property, the completion of a program which will give the city an adequate airport of A-1-A rating was assured.

Plans for the buildings adjacent to the airport were drawn by E. W. Stanford, widely known Birmingham architect, and while subject to change, have been endorsed by City Engineer Hawkins, the municipal airport committee and members of the Birmingham city commission, who have been active in the development of air transportation not only in Birmingham but throughout Alabama.

Present specifications for the hangar are—150 feet long, 125 feet wide, and with a 25 foot lean-to on each side. It will house 25 average size planes and care for the present air travel in Birmingham. Plans call for an electrically illuminated sign on the top of the hangar, large enough to be seen and easily read at high altitudes.

In addition to the hangar a hotel and office structure is planned which will be as modern as any in the United States. It will contain a waiting room, dining room, kitchen, rest rooms, ticket and telegraph offices, room for needed concessions, hospital beds, emergency dressing room, weather bureau office, radio rooms, navigation field control room, four bedrooms, pilots' lounge, dormitory, and several private offices. Other portions of the hangar will contain a motor repair shop, paint and doping shop, postoffice, express office, master mechanics' office, six-car garage for ambulance and fire equipment, and rooms for service truck and tractor. The four towers in the hangar building will contain office space.

Present plans provide for an airport equal to any in America, and are the direct result of the firm belief in air transportation on the part of Birmingham city officials.

Architects' drawing of proposed Birmingham Airport hotel

Airport Bulletin Prepared by Little Rock Bank

An interesting and instructive pamphlet on airports, their selection, construction and maintenance has been issued by the Union Trust Company, of Little Rock, Ark. The pamphlet contains instructive and technical information that will prove of much value to cities contemplating the establishment of airports. The information contained in the pamphlet is based on the knowledge of the Department of Commerce regulations for airports and was prepared primarily to aid cities in Arkansas in establishing airports.

Kansas City-Brownsville Air Line Planned

Officials of the International Airways Corporation have completed a trail-blazing trip from Kansas City to Brownsville, preparatory to establishing a passenger plane service between those points. At Brownsville they will connect with passenger planes to Mexico City and other Latin-American terminals.

Later the company plans to extend its own lines to Mexico City and will establish on the Texas-Mexican border at Brownsville a flying school.

The line will pass through Tulsa, Okla., Dallas and Fort Worth, Texas.

Officials of the trail-blazing trip were Fain Gillock, Brownsville, president of the International Airways Corporation; Frank D. Hedrick, Olathe, Kan., vice president; Ray G. Sparks, Kansas City, general manager, and J. E. Akers, Wichita, Kan., vice-president and general manager of the Aeronautical Securities Company.

Mexican Airline Officials Present 1929 Report

A total of 982 passengers were carried on the lines of the Aeronautical Transport Corporation during 1929, it is shown by the aviation enterprise's annual report just issued. This service conducts the passenger, mail and express line between Mexico City and Ciudad, Juarez, (El Paso, Texas), where link-ups are made with American air transport routes. The company also operates a branch service between Chihuahua City and Nogales, state of Sonora, and a line between Matamoros (opposite Brownsville Texas) on the Gulf of Mexico coast and Mazatlan on the Pacific seaboard —Mexico's only transcontinental airway.

The Corporation's lines last year carried 2071.605 kilos of mail and its planes flew 837,849 kilometers.

Proposed hangar for the new Birmingham municipal airport

500% Traffic Increase from Rate Cuts

PASSENGER traffic over five airlines operated by three separate companies from Winburn Field, San Antonio (Texas) municipal airport, has increased 500 per cent within the past month due to reduction of rates, it was announced by Wayne Parks, manager of the airdrome.

At the present time there are between 35 and 40 passengers leaving the airdrome on daily flights. A rate reduction averaging 50 per cent is in effect.

The Cromwell Airlines operate the line from San Antonio to San Angelo, Texas, while the Transportes Aero Transcontinental's line extends from San Antonio to Torreon and San Luis Potosi, both in Mexico.

The other three passenger lines operating from the municipal airdrome belong to the Southern Air Transport Flying Service, Inc. One flies from San Antonio to Corpus Christi to Brownsville; another from San Antonio to Houston, and the third from San Antonio to Austin, Waco, Fort Worth and Dallas.

Two Alabama Towns Open Airports

Two South Alabama towns—Greenville and Brewton — opened municipal airports with formal dedications recently.

The Greenville air field, established by the Lions Club of that city and presented to the city, is located about three miles northeast of Greenville and is reported to be properly marked. The work was in charge of a Lions committee composed of Julian McGowin, Claude Blackfell and F. W. Stanley, appointed by President A. T. Watson. It was presented to the city by Mr. McGowin and accepted for the city by C. E. Hamilton.

Brewton's field was opened under auspices of the American Legion with State Commander George Grant as guest of honor. The field contains 60 acres, is entirely cleared and leveled, has runway, wind indications and a floodlight and is two and one-half miles northeast of Brewton.

New Curtiss Hangar Formally Opened at Miami

Formal dedication of the Curtiss Wright Flying Service hangar and administration building was held recently at the Miami Municipal Airport. L. W. Botts, vice president of the service, welcomed official visitors and the general public. Later in the afternoon many of the guests were taken on short sight seeing trips by air.

The new administration building and hangar was erected for the Curtiss Wright Flying Service by Sandquist & Snow at a cost of $75,000. The landing field and runways, material of which consists of a combination which requires no sub base, were built by the Southern Airport Construction Company.

The entire building consists of passenger terminals, restaurants, waiting rooms, a library, shops and hangar, flying and ground school, offices of administration and an observation balcony facing eastward toward the flying field. Dimensions of the building are 120 by 120.

City officials present included Frank H. Wharton, new City Manager of Miami; Andrew H. Heermance, Director of Aviation for the City; R. V. Waters, president of the Greater Miami Airport Association, and Walter W. Bruns, general manager of the Miami All American Air Races.

Bills in the Kentucky Legislature would create a State Airboard, which would license all pilots, and issue rules and regulations which would have to be complied with, and which will be closely modeled after the Federal regulations, as to flying and operation of fields.

Rates Are Reduced by Cromwell Airlines

A temporary reduced rate made for the benefit of holiday travelers proved so successful that it will be continued indefinitely, according to D. D. Myers, traffic manager of Cromwell Airlines in Texas.

The lines operate between Fort Worth and San Angelo, and between San Angelo and San Antonio.

The reduced rates figure around five and one-half cents a mile. Myers said that receipts increased 25 per cent when the rates were cut.

The Airports Engineering and Construction Corporation of the Southern Air Transport has been awarded the contract for three airports in Louisiana and Texas. They will build the $300,000 municipal port at Shreveport, install the lighting equipment and build a hangar at Natchitoches, Louisiana, and condition the field, install lighting equipment and build a combination hangar and administration building in Texarkana.

New Airport Planned for Baltimore

Plans for Baltimore's latest airport development, Rutherford Field, have been completed and work on the project will begin within the next few weeks, according to an announcement by Fred Neesemann, president of the Baltimore Airport, Inc., owners of the project, and Oliver B. Rutherford, secretary and treasurer. The airport will be on a 125-acre tract of land on Rolling road at Windsor Mill road. The plans of the company are to develop the field in accordance with the United States Department of Commerce A-ratings. The field will have two runways, 2,500 feet long, at right angles and into prevailing winds. The site is 600 feet above sea level, which, it is believed, will free the field from fog and smoke hindrances. It is planned to have the field in operation some time this summer.

Pilots on passenger lines of the Southern Air Transport with a total of five thousand hours time in the air will be awarded a gold star to be worn on their sleeves.

Southern Air Transport Will Operate Braniff and Central Airlines

THE Southern Air Transport division of American Airways, Inc., with headquarters in Fort Worth, Texas, has taken over management of the Braniff Air Lines, Inc., and the Central Air Lines, Inc. The combined three systems will be known as S. A. T. division of the American Airways into which the subsidiaries of Aviation Corporation have been absorbed. Braniff Air Lines operated between Dallas, Fort Worth, Wichita Falls, Tulsa and Oklahoma City; Central Air Lines between Tulsa, Wichita, Kan., and Kansas City. S. A. T. operated in Texas, Louisiana, Alabama and Georgia.

Expansion Program of American Airways

THE first move of American Airways, Inc., new operating company of The Aviation Corporation, to improve its air passenger service was announced by James F. Hamilton, president, in the form of a fast through service between Cleveland and Dallas, effective February 10.

The line, operated by the Universal and Southern divisions of American Airways, Inc., serves directly Cleveland, Chicago, Kansas City, St. Louis, Tulsa, Fort Worth and Dallas, a larger number of important centers of population, it is said, than is served by any other airline in the United States. In conjunction with train service from eastern cities to Cleveland, it will provide the fastest travel service available between the East and the Middle West and Southwest.

Fokker F-10 tri-motored monoplanes, seating 12 passengers and two pilots, will operate all the way from Cleveland to Dallas. At Chicago the line will split, one plane going to Tulsa, Okla., via Kansas City and another going to the Oklahoma point via St. Louis. At Tulsa the lines will converge and continue to Dallas via Fort Worth.

The American Airways link between St. Louis and Tulsa is an entirely new service. On the Kansas City-Dallas link, the Fokker tri-motored planes will replace single engined monoplanes now in service..

The new service provides overnight train connections to and from New York, Boston, Washington, Philadelphia, Baltimore, Pittsburgh, Houston, San Antonio, Shreveport, Little Rick, Memphis, and numerous other important cities.

By rail over the New York Central between New York and Cleveland and by air over American Airways, Inc., between Cleveland and Dallas, passengers may travel from the eastern metropolis to the Texas city in 26 hours as compared with 48 hours for the all rail journey. Between New York and Kansas City travel time is cut to 22 hours by air and rail compared with 31 hours by train.

The time for the air journey between Cleveland and Dallas is 12 hours and 10 minutes. Under the new schedule, planes of the Universal division will leave Cleveland nearly two hours later than at present, making it possible for persons going from New York to depart at 7:45 p. m. over the New York Central instead of 10 p. m. as at present, and connect with the American Airways plane at Cleveland at 9:05 a. m. the next morning. The new schedule also makes possible quick train connections for Washington, Baltimore, Philadelphia and Boston.

The schedule for the line follows:

WESTBOUND			EASTBOUND	
9:05am	Lv	Cleveland	Ar	7:45pm
10:50	Ar	Chicago	Lv	4:00pm
11:00	Lv	Chicago	Ar	3:55pm
1:25pm	Ar	St. Louis	Lv	1:40pm
1:50pm	Lv	St. Louis	Ar	1:15pm
5:10pm	Ar	Tulsa	Lv	10:15am
11:00am	Lv	Chicago	Ar	3:55pm
3:05pm	Ar	Kansas C	Lv	12:15pm
5:10	Ar	Tulsa	Lv	10:15am
5:15pm	Lv	Tulsa	Ar	10:10am
7:50pm	Lv	Ft. Worth	Lv	8.05am
8:15pm	Ar	Dallas	Lv	7:40am

In addition to the through line, local services are operated by the Universal division from Kansas City to Tulsa via Wichita, Kans., and by the Southern division from Tulsa to Houston via Oklahoma City, Wichita Falls, Fort Worth, Dallas and Waco.

American Airways, Inc., has taken over all the air transportation activities of the subsidiaries of The Aviation Corporation, including Universal Aviation Corporation, Colonial Airways Corporation, Southern Air Transport, Inc., and Interstate Airlines, Inc.

The expansion and improvement of the air passenger service between Cleveland and Dallas is the first of many changes and improvements planned by American Airways, Inc.

Lower Fares Stimulate Passenger Travel

PROOF that high fare has been the greatest deterrent to a general acceptance of air travel is seen in the immediate remarkable increase in air passenger traffic over the lines of The Aviation Corporation system, now American Airways, Inc., following the fare reduction of January 22. Passenger rates on the corporation's system including the lines of Universal Aviation Corporation, Colonial Air Transport, Southern Air Transport and Embry-Riddle were reduced to a level comparable with those for rail and pullman travel.

The response of the traveling public was immediate and so large that several of the lines have been forced to put on larger airplanes or run two and three planes where only one was flown before the new fares went into effect.

During the first few days the lowered rates were in effect, according to James F. Hamilton, operating vice-president of the corporation, passenger traffic increased more than 400 per cent over the system, compared with an average previous three-day period at the higher rates.

"We expected a large increase in air travel to follow the rate reduction," said Mr. Hamilton, "but the immediate response and the carrying of five times as many passengers in the first few days the new rate was in effect as we did in a similar previous period, was even better than we had anticipated."

New Operations Building at Logan Field

The City Operations Building, is the new operations building which has been opened at Logan Field, Baltimore, Md., and is now occupied by the field custodian, field manager, and the local offices of the Eastern Air Transport, Inc., operators of the air mail service.

The above photograph shows the new Curtiss hangar a nd administration building dedicated in Miami in February. It was constructed by Sandquist and Snow, airport contractors.

NEW AIRPORT DEVELOPMENTS

Birmingham, Ala.—A bond issue for $1,000,000 for an A-1-A airport was approved February 11. A 350-acre tract near the city has been approved by Department of Commerce officials.

Brewton, Ala.—A 60-acre airport has been opened here. It has been cleared and leveled and has runway wind indicators and a floodlight. It is located 2 1-2 miles northeast of Brewton.

Troy, Ala.—The city council here has completed negotiations with R. E. Wheeler for a tract of land consisting of 80-acres within two miles of Troy on the Troy-Elba highway for a municipal airport. Two runways will be constructed that will accommodate large planes and allow take-offs in any direction.

Lake Worth, Fla.—A combination land and sea plane airport is projected here. A site has been selected on a lake front and improvements are pending.

Jacksonville, Fla.—A service base directed by E. E. Starr has been established at the municipal airport here by Roosevelt Flying Service.

Melbourne, Fla.—Space on the Melbourne Golf and Country Club course near Melbourne has been prepared as a landing field for planes.

Lakeland, Fla.—A training camp at the Haldeman-Elder Airport at Eaton Park has been placed at the disposal of the Curtiss Wright Flying Service.

Sanford, Fla.—Improvement of surface and installation of wind direction indicator are among the recent developments at the local airport. The city expects eventually to develop this into a municipal airport.

Commerce, Ga.—A landing field has recently been completed on the property of John Richey near the city limits of Commerce.

Dalton, Ga.—The municipal airport here is expected to be completed within a month. Beacon lights have already been installed.

Frankfort, Ky.—Work is expected to start on a municipal airport for Frankfort within a short time.

Louisville, Ky.—Additional lighting for Bowman Field is expected to result from favorable action on a bill now in the Senate which will provide funds for lighting equipment. Two old hangars will also be removed from the field.

Madisonville, Ky.—Plans have been approved for establishment of an airport here.

Marshall, La.—Plans are under way for establishment of an airport for this city.

Selma, La.—Plans for enlarging the local airport are under way.

Natchitoches, La. — A $15,000 hangar will be built at the local municipal airport.

New Orleans, La.— A new beacon light of 15,000,000 candle power has been installed on top of the administration building at the Menefee Airport for Gulf Coast Airways.

Shreveport, La.—Plans for the engineering work on the municipal airport here are being prepared by H. E. Barnes, city engineer of Shreveport. Conditioning of the field will cost approximately $150,000. The site consists of a tract of 300 acres which will be provided with drainage.

Bogalusa, La.—New hangars will be built immediately at the local airport.

Baton Rouge, La.—Contract has been awarded C. B. Stewart by the Baton Rouge Parish Police Jury for installation of drainage equipment at the municipal airport. His bid was $4,073.25. The drainage system will include furnishing and installing of 10 to 24 inch pipe and catch basins. A. G. Seifried, Inc., Baton Rouge, are engineers.

PASSENGER RECORD AT MEACHAM FIELD

February 12 saw a new record in aerial passenger travel at the municipal airport in Fort Worth, Texas—Meacham Field. On that day 103 passengers arrived or departed on passenger planes, exclusive of those taking hops at the field. In addition to the 103 regular passengers carried, the planes in which they took passage carried crews totaling 39.

Corinth, Miss.—An option has been taken on the 140-acre farm of Pat Hanley located two miles southeast of Corinth for a municipal airport. The selection was made by the Chamber of Commerce committee and S. F. Tannus, president National Airways Systems, of Peoria, Ill.

Winston-Salem, N. C. — Forsyth County, the city of Winston-Salem and Reynolds Aviation of North Carolina, Inc., will cooperate in improving conditions at the hangars at Miller Field. Grading and removal of top soil are on the improvement program. An oil coated soil covering will be laid.

Enid, Okla.—Dedication of the new 160-acre municipal airport and $60,000 hangar is scheduled to take place here within a short time.

Anderson, S. C.—A sum of $35,000 is being raised to provide a municipal airport in Anderson. A portion of this sum will be demanded of the Anderson county legislative body at its next meeting.

Greenville, S. C.—A $57,000 improvement program for the municipal airport here has been approved by the Chamber of Commerce board of directors. The addition of more land, grading and the acquisition of lighting equipment are called for in the equipment program.

Rock Hill, S. C.—Improvements will be made at the airport owned by John T. Roddey who has been assured by Department of Commerce representative, Marshall C. Hoppin, that the field offers excellent opportunities for a high government rating.

Chattanooga, Tenn.—A terminal building and hangar have recently been completed at Lovell Field, the local municipal airport. The entire airport will be in use within a few weeks.

Columbia, Tenn.—The John M. Gray field on the Mt. Pleasant site has been leased for an airport. Extensive improvements at the field are expected to place Columbia on an airline.

Nashville, Tenn.—The Board of Governors of the Nashville Chamber of Commerce are urging Mayor Howse to call a special bond election to provide adequate land and equipment for the new municipal airport for Nashville.

Knoxville, Tenn. — Obstructions surrounding the McGhee-Tyson airport are being removed and plans are being formulated for grading and other improvements at the field.

Brownsville, Tex.—Two new hangars are being built at the local airport.

Midland, Tex.—An intermediate landing field will be established here by the war department.

Shamrock, Tex.—Additional runways, a hangar and field markings are being installed at the 160-acre airport here. The field has recently been purchased by H. J. Ewton, automobile dealer.

Georgetown, Tex.—Approximately $12,000 is available for buying a 100-acre airport site. A site has been approved by Department of Commerce officials. The airport will be equipped by the Department of Commerce.

Waco, Tex. — Floodlights have been installed at Rich field and border lighting improved.

Dallas, Texas—The new 260-acre Curtiss field here and the $80,000 hangar will be dedicated soon.

San Marcos, Tex.—The United States Department of Commerce through the Department of Airways has leased the tract belonging to County Judge Will H. Thompson two miles southeast of San Marcos for a lighted landing and emergency field. The field is on the route from Dallas to Brownsville.

Winchester, Va.—The Chamber of Commerce here is negotiating for a large acreage tract for a municipal airport.

Roanoke, Va.—Contract for removing 25,000 cubic yards of dirt at the Roanoke municipal airport has been awarded to John A. Archer and Sons of Ivanhoe, Va. Runways are expected to be completed by May 1.

Fairfax, Va.—A flying field for students training to be operated in conjunction with the Hoover Field near here is nearing completion. Hangars will be built within a short time. The field will also be available for emergency landings by mail planes.

Hopewell, Va.—Additional funds have been made available for continuance of work on the local air field.

Aeronautical Personalities

The Unusual Hobby of An Airmail Pilot

HENRY T. (DICK) MERRILL watches the airway beacons flash below him as the motor of his airmail plane roars through distance. It is the roar of 220 horsepower, carrying the mail on wings

Dick Merrill

over the New York-Atlanta-Miami airway, on which this pilot flies the Atlanta-Richmond section.

Then, when this fast-moving Southerner has ended his nocturnal jaunt of 484 miles in a bit less than five hours, he enters his apartment in Richmond and is greeted by another roar.

This latter roar is of one lion power!

For Dick Merrill, languid native of New Orleans, is a fancier of pets. He has owned a monkey, a score of squirrels of the flying variety, dogs and a variety of other animals. It is quite natural that he should want a son of the king of beasts as a mascot—a prince of the animal kingdom. So Merrill watched his chance, kept a sharp lookout for some sign that would mean "For Sale, a Lion." And now he's got it.

He's very tame as lions go. He'll let you pick him up; he'll let you twist his tail; he'll let you maul him around a bit. True, the young roarer is just three months old, but he has paws as big as a man's fist and fangs that mark him as a distant relative of old sabre-tooth. He holds in utter disdain Dick's pet dog. The canine, feeling playful, jumps all over the lion, which shoves him aside with a swing of the paw that is not meant to injure. Or the dog gets a good grip on the lion's hide, and the elegant Sir Leo stalks along dragging the dog, stiff-legged, behind him.

That's one of his pets. Dick also has five flying squirrels, presented to him at Christmas. It is a peculiar thing, but the squirrels are much wilder than the lion. They fight when picked up—when you can catch them to pick them up—chew on the furniture when turned loose in a room, in fact are utterly unsociable.

There's a story behind the squirrels. Dick had one at one time that was a gentle, tame and delightful mascot, as friendly as an old yellow dog. He would cavort all over his owner, and made his home in a pocket. In the air flying the mail, the squirrel snuggled down in a pocket of Dick's flying suit and slept, or stuck his head out and squinted at the stars and listened to the wires hum as the pilot sped along. He won the title as the world's fastest flying squirrel, for he covered the distance between Atlanta and Richmond on many occasions in the short hours on the two sides of midnight.

But one day the squirrel disappeared. Merrill offered rewards, pleaded, organized a hunt. But the mascot was gone. Then Christmas came, and five people who had heard of the pilot's loss each sent him a flying squirrel. These are the wilder-than-lions flying squirrels.

Dick has given up hope of taming them, but he has a method. He is going to get—not one, but many, tame squirrel mascots. For squirrels is squirrels, and he plans taking the new generation in hand when it is very young and following this formula: "Get 'em while they're young and teach 'em right."

Igor Sikorsky, noted inventor of the Sikorsky amphibian, spent several days in Miami recently on an inspection trip of facilities for the Pan American Airways. During the Miami trip, Sikorsky also flew to Havana.

Jack Dare Claims Record for Delayed Jump

OFFICIAL recognition of an 11,000-foot delayed parachute jump, if duly extended, will give Jack Dare the world's record for a delayed jump. Affidavits attesting to Dare's jump have been signed by members of the National Aeronautical Association in Birmingham.

Dare is connected with the Red Wing Flyers who, at the time of his jump, were carrying passengers and giving aerial exhibitions on Messer Field, Birmingham. Two altimeters were carried on the plane from which Dare jumped. One registered 15,000 feet and the other 15,500. Glenn E. Messer, Birmingham aircraft manufacturer, flying a plane at 4,000 feet altitude said that Dare passed his plane before the chute opened.

Army and Nevy tests have shown that a falling human body reaches a

Jack Dare

maximum speed of 118 miles an hour after the first 1,200 feet, and that this speed remains constant thereafter.

Dare said that the only sensation experienced during the fall was a dizziness caused from the spiraling of his body in the drop through space.

L. W. Lee has been appointed chief of operations for the Curtiss Wright Marine Base in Miami in place of Robert Bellchambers, who is on a four month's leave of absence.

Mexico's Ex-President on Notable Flight

SOARING to a height of 23,000 feet over the volcano "El Popo," Ex-President Portes Gil, of Mexico, just before his retirement from office, led the way in Mexico's air week observances in commemoration of Captain Emilio Carranza, Mexican flier who was killed in New Jersey in 1928 while on a good will flight to the United States.

From the huge tri-motored all-metal monoplane, Portes Gil had the following message radioed to his wife: "From an altitude of 23,000 feet, as we are now over the crater of El Popo Volcano and enjoying the gorgeous beauties of nature, I send to you, to mother and to Chacha, our little girl, loving greetings."

Many radio messages were exchanged with the President's plane

Ex-President Gil (center)

during its hour and one-half flight over the Valley of Mexico. Among them were several from American pilots flying over the Gulf of Mexico between Tampico and Brownsville.

Johnston is South's Only Flying "Drummer"

Joseph R. Johnston, of Hattiesburg, Miss., says he is the only flying "drummer" in the South. If there are others, Mr. Johnston says he would be glad to form some sort of "drummers' " flying federation.

Mr. Johnston is a salesman for the Waterproof Paper and Board Company, of Cincinnati, Ohio, selling waxed bread paper wrappers to wholesale bakers throughout the South.

He was an instructor in the Navy Motor School at Pensacola, Fla., during the war, where he had his first aviation experience.

In 1928 he decided to travel the southern territory by plane, purchasing a Command-Aire with which to

Joe Johnston

call on his trade. From March 1928 to November 1928, he traveled 3200 miles at an expense amounting to no more than that of operating a medium priced automobile, he says.

During this period, Mr. Johnston states that his repair bills were less than $150 and that the publicity gained by use of the plane has been most favorable. He has carried over 200 of his customers for a "hops" and also many of their friends.

Van Dusen Promoted by Glenn L. Martin

Charles A. Van Dusen, for the past seventeen years associated with the Glenn L. Martin Company, aircraft manufacturers of Baltimore, Md., is now general manager of the company, to which position he was appointed by Glenn L. Martin, founder and head of the concern which bears his name. Mr. Martin will give more of his attention to airplane designing and developing the system of manufacture, so that new ideas can be put into effect with minimum delay.

The new general manager of the Martin plant entered the employ of the company as an ordinary mechanic in order that he might learn the work of airplane construction from the ground up. He advanced steadily, and held many key positions. For the last three years he has been vice-president and assistant general manager of the concern.

The following have been added to the pilot's staff of the New York, Rio, Buenos Aires Lines in Miami: George Cobb, former chief pilot of the Curtiss Wright Flying Service, and Robert Hively and N. M. Ayres, formerly of the Pan American Airways Inc. Cobb has been appointed chief pilot of the New York, Rio service to Havana.

Jacksonville's First Woman Pilot

JACKSONVILLE now has a woman pilot. It is the city's first feminine addition to the ranks of the pilots and the third for Florida.

The pilot is Miss May McCormick, aviation editor for the Jacksonville Journal. She reecived her private license from Inspector J. R. Puckett, of the Department of Commerce, in Jacksonville, recently.

Last spring the Journal held a contest among women of Jacksonville in order to select one to whom they would give a course in flying. Two hundred and fifty girls entered the contest and after a series of competitive tests Miss McCormick was selected as winner.

She began her course May 10 and soloed after nine hours of dual instruction with Laurie Yonge, instructor at a flying school bearing his name. All during her period of instruction she wrote her experiences in learning to fly for readers of the Journal.

After her solo flight, August 23, she was made aviation editor for the paper and has since been made a part of their regular staff.

Without means to indulge her favorite sport except by her own efforts, she has added twenty minutes at a time to her log book until she

May McCormick

was eligible to stand the examination.

In a borrowed plane on the coldest day of the year she stood the examination—and passed.

Miss McCormick is planning to continue in order to get her limited commercial and finally a transport license. Since entering the field of aviation she has spoken before numerous groups of men, women and children in the interest of things aeronautical.

His First Experience With the Stick

WILLIAM F. (BILL) SALATHE, aeronautical reporter for the San Antonio Evening News (Texas) is no shrinking violet, nor one to turn thumbs down on opportunity—

William F. (Bill) Salathe

even though opportunity be presented through a case of mistaken identity.

Recently, while meandering about Winburn Field, San Antonio municipal airport, Bill ran across a pilot of a tri-motored job who was a congenial chap, and the two struck up a friendly conversation. It was not long until the pilot and Bill were soaring up among the clouds far above the Alamo City.

Bill sat back and took it easy, musing, with a sagacious countenance, about the opportunities literally thrust upon an aeronautical reporter. He was roused out of his day-dream by the booming voice of the pilot.

"Want to take the stick?" he heard above the roar of the engines.

"Sure" yelled Bill.

And for 20 minutes Bill was in seventh heaven; sailing high in spirit and body. He could have been cited under the Sherman Act for his monopoly of the controls. He went just about everywhere he had often wished he could be in his past dreams as a mere reporter on terra firma.

The pilot finally took the controls and landed.

"I ask you," he said enthusiastically, "isn't that plane some baby?"

"Sure is," replied Bill, amicably.

"But in your honest opinion," continued the pilot, "did you ever fly a better ship?"

"Nope," grinned Bill, candidly, "that was the ONLY plane I ever piloted.

The pilot's face, although ruddy from sun and wind, suddenly blanched. He half keeled over, caught himself, and with quavering voice, said slowly.

"No wonder you made such a sharp turn up there. And all the time I thought you were a pilot."

Gus Leazer has recently been made base manager of the Curtiss Wright activities in Raleigh to succeed E. H. Threadgill, who started the Curtiss flying school, airport, passenger transport and other aviation activities here.

First Air Mail Pilot Dies at Ft. Worth

Randolph G. Page, first man to fly the night air mail, died February 21 at his home in Fort Worth, Texas, where for the last 18 months he had been vice president of the Texhoma Aeronautical Service, a subsidiary of the Stinson Aircraft Corporation. He was a government mail pilot for eight years and had served 18 months overseas during the World War.

Oliver L. Parks

Oliver L. Parks, shown in the accompanying photograph, is vice-president and general manager of Parks Air College, Inc., St. Louis, Mo., said to be the largest civilian aviation school in the world. Parks, who is 30 years old, took up flying in 1924 purely as a hobby. He converted his knowledge to commercial use in 1927 when he organized Parks Air College. The school was sold last fall to the Detroit Aircraft Corporation for more than $1,000,000. Parks continues in his capacity as vice-president and general manager of the school. He is a licensed pilot with more than 1500 hours in the air to his credit.

Willard Prefers to Remain a Flyer

Sherman Willard would rather be a flier than an operations manager. To prove it, he gave up that post with Corporation Aeronautica de Transportes of Mexico to fly the Houston-San Antonio passenger line of the American Airways, Southern Air Transport division.

Willard formerly was an air mail pilot, flying along the Gulf Coast.

Sherman Willard

He taught himself to fly on a Jenny in 1923.

Another new flier on the Houston-San Antonio line is Herbert Kindred, veteran of the National Air Transport, for which he was one of the original Dallas-Chicago mail route pilots. He once barnstormed all over the United States and Mexico, conducting his own circus.

Tommy Ward, one of the oldest seaplane pilots in the United States, has been appointed chief test pilot for the Miami Aircraft Corporation, it is announced by M. C. Landis, general manager of the factory. Ward was the first pilot to take a commercial cargo from this country to a foreign country. He carried a cargo of merchandise from Miami to Havana. He finished more than 225 hours in the air flying the tri-motored Ford of Captain O. M. Goodsell's on a tour of the United States and Canada.

Harry Huking, veteran transcontinental air mail pilot, has been reelected president of the National Air Pilots' Association, which started some years ago with a membership of sixty when it was known as Air Mail Pilots of America. It now has a membership of 700 pilots.

Huking flies Boeing tri-motored transports on the night run between Reno, Nev., and Oakland, Calif.

Unusual Distinction for Youthful Aviatrix

THE only woman pilot in the Curtiss-Wright Exhibition Company's tour of the United States that is scheduled to leave soon from Miami, Fla., and which will require a year to complete, will be Miss

Margaret Thomas

Margaret Thomas, 17-year-old San Antonio aviatrix.

The other ships in the tour will be piloted by Dale "Red" Jackson, endurance flier; Fred Lund, Swanee Taylor, New York aerial writer, and H. D. McRady.

Despite her youth, Miss Thomas was selected for the tour from among 80 or more young women. She was until recently a demonstration pilot for the Curtiss-Wright Flying Service at New York.

Miss Thomas entered upon her career as a pilot at the tender age of 15 years, before she was of legal age to become a flying student. At that time she became acquainted with a youth who gave her lessons in a reclaimed "crate" of archaic vintage, at $5 an hour.

When she had received four hours' instruction she discovered that a student must be 16 years of age before taking up flying, and she then decided to wait awhile before completing the training.

With her previous flying experience well in hand, she enrolled with the Texas Air Transport Company at Fort Worth some time later, and in the short span of one month she earned her pilot's license.

Recently she has been waiting for the month of March to roll around, for during this month she becomes 18 years old and privileged to seek a transport license and become a regular commercial pilot.

Miss Thomas has more than 200 flying hours to her credit and has never had an accident in flying. Her closest call to a severe mishap was a forced landing.

After a recent visit with her father, Hubert Thomas, of San Antonio, the young aviatrix left for Wichita, Kan., where she was to procure from the Curtiss factory the plane she will fly in the tour.

After a few weeks preparation at Miami, the tour, backed by the Curtiss-Wright Exhibition Company, will leave for Havana, Cuba. It then will swing back to New Orleans and thence over the United States.

Capt. H. D. Norris, vice-president of the exhibition company, will follow the tour by train.

John D. Rockefeller took his first airplane flight at Ormond Beach, Fla., recently. He was taken up by Blance and Dewey Noyes, flying husband and wife from Cleveland, Ohio. They received brand new dimes for their pains as well as the distinction of being the first to get the world's richest man up in the air.

Gilmore Soloed After Only 2 1-4 Hours in the Air

Six flying lessons were enough to make a lone eagle of J. M. Gilmore of Tampa, Fla., who recently made his first solo flight at the Tampa field after only two hours and 15 minutes instruction in the air. Hugh Woods, of Airways Transport, Inc., the instructor, believes his performance sets some kind of record.

Gilmore spent hours with his mind in the air and his hands on imaginary controls, and when he took up actual flying his landings with an instructor were so consistently perfect that he was told to try it alone. He

J. M. Gilmore

came down for a perfect three-point landing.

Nearly 50 students are taking flight instruction at the Tampa field, enrolling with Airways Transport and the McMullen Aircraft company.

Future Pilot Starts His Training Early

AT AN age when most airminded youth of the land are still engrossed in the mysteries of airplane model building, and are flying only in dreams of the future, Leonard Epstein, 13-year-old son of Ben Epstein, owner and operator of the Grand Central Air Terminals, Norfolk, Va., is already getting the "feel" of the joy stick of a plane.

Growing up in an atmosphere of aviation—his father has been en-

Leonard Epstein

gaged in the selling of airplanes and airplane motors for the past nine years—Leonard is entirely devoid of the "air consciousness" that is so definite and uncomfortable a part of the makeup of most older persons when they forsake Old Mother Earth to go zooming around in the clouds, and is as much at home in the cockpit of a plane as are most youths of his age in the tonneau of an automobile.

A Waco training plane of the Grand Central fleet is Leonard's especial pride and, while he is still a bit too new upon this earth to begin flight training in earnest, he already has more than two score hours in the air to his credit and on more than one instance, while the plane was roaring along at the safe altitude of some 5,000 feet, has been permitted to hold the controls for a few minutes.

James G. Hazlip, formerly of Tulsa, Oklahoma City and Norman, Okla., has accepted a position with the Shell Petroleum Company, as assistant to Lieut. Jimmy Doolittle. Mr. Hazlip resigned as pilot for the Safeway Airlines in order to take the new position.

A. H. Bowman, founder of Bowman Field, Louisville, and father of aeronautics in Louisville, was recently named chairman of the Aeronautics Committee of the Louisville Board of Trade.

General News of THE AVIATION INDUSTRY

Mid-South Aviation Group Organized at Memphis

THE Mid-South Aeronautic Association, recently organized under the sponsorship of the Memphis Chamber of Commerce, will hold its first convention in Memphis March 27-28.

Nationally recognized leaders in all of the principal phases of aviation development will address the representatives of seven states which will gather in Memphis for the first convention to perfect a permanent working organization, according to Major Robert Haverty, who is temporary president of the new organization.

Development of local airports, furtherance of the emergency landing field movement, encouragement of additional air mail lines, north, south and east, and west in the mid-south, establishment through proper encouragement of passenger and express air lines covering the same routes, and bringing about a southward trend of aircraft manufacturing, are announced by Haverty as the principal objectives of the new association. Representatives of the leading manufacturing and transport groups in America have already been invited to speak on the program and to outline the task that can be carried out by the cities of the mid-south in bringing into realization the day when general commercial use of the air will be an accomplished fact.

Cone Becomes Sales Manager of American Eagle

Maj. J. Carroll Cone of Little Rock, Ark., a pioneer in the aircraft industry and a veteran flier of the World War, has been elected a vice president of the American Eagle Aircraft Corporation to supervise sales.

E. E. Porterfield, Jr., president of the company, in making this announcement said D. H. Hollowell, a vice president of the company who has been in charge of sales for the last year and a half, now is to devote his entire attention to the airport development activities of Porterfield Aviation Interests, Inc., of which he also is a vice president.

Major Cone began flying in Monroe, La., early in 1917 with the air service section of the signal corps and went to France in September, 1917, as chief instructor at Issoudon. As a result of later active duty at the front he received three citations and was credited with six unofficial and three official victories in combat.

After the war, Major Cone served as deputy secretary of state and two terms as state auditor of Arkansas. He was a candidate for governor in the last election in that state. He now is a member of the national board of governors of the National Aeronautical association and chairman of the state aircraft board of Arkansas. He also is commanding officer of the 154th observation squadron, with headquarters in Little Rock.

Weather Reporting Station on Interstate Lines

The weather reporting stations between Atlanta and Chicago along the air mail route operated by Interstate Airlines, Inc., are now ready for operation, it is announced.

Starting with Atlanta, the regular reporting stations are located at Cartersville and Dalton, Ga., Chattanooga, Sewanee, Manchester, Sky Harbor, Nashville, Tenn., Russellville and Greenville, Ky., Evansville, Ind., Vincennes, Terre Haute, Waynetown, Wollcutt, Shelby, Ind., and Chicago. Stations at Manchester, Waynetown and Shelby are new ones recently installed.

Off-line stations, reporting only on call, are Rome, Ga., Jasper, Tullahoma, Hopkinsville, Ky., Nortonville, Providence, Bowling Green, Shoals, Ind., Olney, Ill., Danville, Ill., and Kankakee, Ill.

Within the next two months a system of radio communication for guiding mail pilots from a series of broadcasting stations will be ready for operation, it is said. Plans have been announced for one of these stations at Tennessee's Sky Harbor, while other stations in the link probably will be at Chicago, St. Louis, Chattanooga and Atlanta. Some of these already are ready for operation.

Naval Reserve Station at University of Miami

FORMAL orders were received from the Navy Department, recently establishing a Naval Reserve Aviation station at the University of Miami. Work on the organization of such a Division is to be started immediately, with the selection of four officers and eight enlisted men. Fred B. Given, instructor in Aviation at the University of Miami, has been commissioned as Commanding Officer of the New Aviation Division.

The establishment of the station at the University will mean the placing of from four to sixteen planes in constant use and also calls for twelve men to be located in Miami. The orders read as follows: "As soon as there are four officers available for appointment in Class A-F, and eight enlisted men available for aviation rating, the Bureau of Navigation will be notified by the Commandant, and upon receipt of orders from the Bureau, appointments and enlistments will be made.

"You are hereby designated Commanding Officer, Aviation Division VN-8RD7, U. S. Naval Reserve, Seventh Naval District, Miami, Florida. As such you are authorized to administer oaths in recruiting the Naval Reserve.

"As Commanding Officer, you are directed to establish and organize Aviation Division VN-RD7, Miami, Florida, with personnel residing in Miami and vicinity, in accordance with your detailed instructions and such instructions as you may receive from the Commandant.

"The authorized quota of officers and men for the Miami Division will be 8 officers of Class A-F and 8 men in aviation ratings, in Class F-1. The ranks of the officers and the ratings of the men are contained in the Secretary of the Navy's letter. It is not desired to complete the enlistments of any of these men at Miami prior to the establishment of the new Aviation Division at that place: however, likely candidates should be interviewed so that the authorized quota may be enlisted promptly upon the establishment of the Division."

New Stearman Speed Mail Service on S. A. T.

A powerful new speed plane, designed to improve service over mail routes operated by the Southern Air Transport division of the American Airways, Inc., has successfully completed its maiden flight to various points in Texas on the S. A. T. line

Piloted by Jerry Marshall, operations manager of the division, the trip was made as a test flight. The ship will be flown over the entire system by Marshall, after which it was scheduled to go into regular service over Southern Air Transport lines.

The new plane, a Stearman, was purchased to take care of the steadily increasing poundage and to speed up the service. It has a cruising speed of 120 miles an hour with a top speed of 145, which makes it approximately 25 miles an hour faster than any other ship in use over Texas lines and throughout the South to Atlanta, Ga., officials declared.

It can carry 700 pounds of mail as compared with 300 pounds accommodated by the present equipment of the company, and is specially adapted to night and fog flying, being equipped with one of the most complete sets of instruments made.

The ship is the first of a new type and was built especially for the Southern Air Transport. The new design incorporates numerous safety factors, including parachute flares, wheel brakes and fireproof mail compartment. It is powered with a Wright J-6, 300 horsepower engine, with N. A. C. A. cowling. Gasoline capacity permits a flight of seven hours without refueling.

Jerry Marshall, operations manager of the Southern Air Transport, a division of the American Airways, Inc., at the controls of a new Stearman plane that will speed the mail over air mail lines operated by that company. Marshall made the initial flight of the ship, which will add twenty-five miles an hour and carrying capacity of 400 pounds over the present equipment.

Easterwood Sponsors One-Stop Rome to Dallas Flight

Col. William E. Easterwood, Jr., of Dallas, Texas, has deposited a $25,000 cash prize with the Dallas Trust and Savings Bank to be awarded to the first aviator to make a one-stop flight from Rome, Italy, to Dallas, Texas, between the first day of June, 1929, and midnight of the fifteenth day of September, 1930.

The point of departure will be the National Aeronautic Association airport at Rome, Italy. An entry fee of $250 must be posted by each contestant ten days prior to the announced date of take-off, and the date of take-off must be specified at the time the entry form and entry fee are forwarded to the starting committee. A copy of the entry form must also be sent to the Contest Committee of the National Aeronautic Association at Washington, D. C. The $250 fee goes to the National Aeronautical Association, and will be donated by Col. Easterwood.

Both land and sea planes are eligible for the competition. All planes must bear the following words and letters on the fuselage: "Sponsored by Col. William E. Easterwood, Jr., The Texas Easterwood, Rome, New York, to Dallas Flight."

New Distributor Signed for Entire DAC Line

The Ponder Aircraft Corporation of Ft. Worth, Texas, is one of the first distributors to contract as territorial representatives for practically the entire line of planes offered by the Detroit Aircraft Corporation.

Sales offices will be established at several points in Texas and Oklahoma, and Lockheed, Ryan, and Parks demonstrators will be purchased immediately.

New Curtiss-Wright Airport Maps Aid Pilots

A map has been prepared by the Curtiss Wright Airports Corporation that will enable pilots coming into cities with which they are unfamiliar to immediately locate flying fields and other prominent features.

This series of maps is now nearing completion by the Curtiss-Wright Airports Corporation. These maps will cover every city in which the Curtiss Wright Company has an airport or local base. The first map of this series to be completed is that of St. Louis, Missouri, showing the location of the Curtiss-Steinberg airport. According to the legend, airports, revolving beacons, lighted airways, transmission lines, railroads, highways, golf clubs, parks, rivers, cities or towns and elevations are shown. Also, due north and magnetic north are indicated as well as compass readings from nearby towns to the central airport. These new maps are expected to fulfill a long-felt need for pilots who fly into strange cities.

Porterfield Re-opens School at Fairfax Airport

The Porterfield Flying School, Inc., Fairfax Airport, at Kansas City, is to be one of the Pay-as-You-Fly aviation schools of the Porterfield Aviation Interests, Inc., chain.

The school, launched July 4, 1925, by E. E. Porterfield, Jr., now president of the American Eagle Aircraft Corporation, as his initial venture in the aviation field, has been operated since June 1, 1929, by the Universal Aviation Corp. Recently Universal relinquished the name and Mr. Porterfield is opening his own school again at Fairfax.

The school will be operated in conjunction with another at Atchison, Kas. Planes and instructors in the Atchison School will fly to that city each morning and return to Fairfax in the evening. Both will be Pay-As-You-Fly schools. The students will purchase books of tickets for flight time. They fly at their own discretion and one of the school chain's advertising slogans is "devote the afternoon you've been giving to golf to learning to fly."

Aviation Progress Shown in A. C. C. Report

THE annual report of the Aeronautical Chamber of Commerce of America for 1929, issued recently by Frederick B. Rentschler, president of the Chamber, revealed an increase in membership of 112 per cent.

On January 1, 1929, total membership in the Chamber was 456; on December 31, it was 966. Organization membership divided according to specialized interest consists of the following branches of the aeronautical industry: Aircraft and motor manufacturers, 87; accessory manufacturers, 89; airport operators 41; distributors and dealers 97; exporters, 9; finance and insurance firms, 15; fuel and lubricant producers, 21; holding companies, 3; transport operators, (class A) 19; and miscellaneous, 36. The report shows a widely diffused membership.

The increasing number of airlines, particularly passenger transport lines, resulted in a busy period for the Air Transport Section, which was established September 11. On December 31, there were twenty-five member companies in the section. The twenty-five companies fly in excess of 80,000 miles a day over approximately 38,500 miles of airways.

One of the chief accomplishments of this section of the chamber was to work out with the government a satisfactory radio frequency allocation for air transport. This section of the chamber also did valuable work in ascertaining the attitude of business public toward air mail and transport. A survey conducted by the chamber of the attitude of the business public brought nearly 500 comments of business executives who were unanimous in indicating that any recession from national aviation policy would be disastrous to commercial aviation. The First National Air Traffic Conference was sponsored by the Chamber, bringing over 160 delegates together for a discussion of air problems. The National Airport Conference sponsored by the Airport Section brought together approximately 250 airport managers, engineers, architects, city officials and manufacturers and distributors of airport equipment. Regional airport conferences were held in four cities, Boston, Atlanta, Los Angeles, and Bridgeport.

The Commercial Airplane Manufacturers Section emerged from a formative stage into an organization functioning for the orderly advancement of aircraft manufacturing. Three special and two general meetings were held under the auspices of the chamber during the year. Twenty new manufacturers joined the chamber during 1929, bringing the total number up to seventy.

The Motor Manufacturers Section had as its principal accomplishment the ironing out of difficulties with the Department of Commerce and with plane manufacturers.

The Airship Committee made a protest during the year to the Secretaries of War, Navy and Commerce against adherence by the Government to the policy of encouraging the production of helium by the Federal departments alone.

The Accessory, Material and Equipment Section and a Fuel and Lubricants Section also held sessions at Cleveland during the year. Membership in the former section totaled 92, while that of the latter numbered 23, showing an increase of seven during the year.

The Flying School Section during 1929, when so many aviation schools, or so-called schools, were being established played a major part in developing the present regulations covering flying schools. An increase of approximately 75 per cent in membership was made in this section during the year.

During the year 76 distributors and dealers joined the chamber, making a total section membership of 99. It is the purpose of this section to bring the manufacturer and his outlets into direct and sympathetic contact and to supply distributors and dealers with the assistance of the Chamber in handling their local or Class C. shows and other sales or internal problems.

The Finance and Insurance Section was organized in May, 1929. Settlement of difficulties with the Department of Commerce relative to the registration of planes financed by companies engaged in handling of partial payment paper was one of the chief topics of discussion in this branch during the year.

A Legal and Legislative Research Department was set up to inform members in matters pertaining to the development of local, state or national regulation and legislation affecting the aircraft industry.

The Show Section of the department was established in April at a meeting of the Board of Governors in Detroit. A decision to hold only one Class A show each year, and few regional or Class B shows and only such local or Class C shows as were really desired by that part of the industry directly involved was decided upon.

The Information Section during 1929 carried out a publicity program for the industry through newspapers, magazines, radio and other media.

A fairer attitude on the part of newspapers toward airplane accidents was brought about by the Chamber. A mailing list, as an outlet for publicity of more than 1,000 newspapers, aviation editors, trade publications, press associations and news syndicates was developed. An outstanding success in radio publicity was achieved by this section through the series of programs developed by the chamber and broadcast over the nation-wide hook-up of the National Broadcasting Company. The programs, known to millions of listeners as the "Roads of the Sky" series, brought an outstanding figure in aviation to the microphone for a 15-minute talk on some phase of aviation each week. The seven-reel motion picture film, "Flying with Lindbergh," owned by the Chamber, was loaned to a great many organizations. It is estimated that a half million saw the film during 1929.

New Directors Elected by Glenn L. Martin Co.

Donald Symington, president of the Baltimore Trust Co., leading and largest financial institution of Baltimore, Md., and J. G. Gosling, of Otis & Co., of Cleveland, Ohio, have been elected directors of the Glenn L. Martin Company, aircraft manufacturers of Baltimore, Md.

Other directors are Glenn L. Martin, founder, president and chairman; C. A. Van Dusen, first vice-president and general manager; L. C. Milburn, second vice-president; T. J. Jones, secretary; W. A. Crenning, assistant secretary; M. G. Shook, treasurer, and T. H. Ginn.

Chevrolet Motor Will Be Built in Baltimore

THE location of the Chevrolet Aircraft Corporation in Baltimore gives the Monumental city its first airplane motor factory. The concern, which is a subsidiary of the Glenn L. Martin Company, aircraft manufacturers, of Baltimore, was moved to Baltimore from Indianapolis. The Chevrolet company, headed by Louis Chevrolet, former racing driver and designer of the Chevrolet automobile and the Frontenac motor car, was incorporated in Maryland about a year ago.

Designs for a light four-cylinder engine weighing only 283 pounds and capable of an air speed of one hundred miles an hour, were developed in the factory at Indianapolis. The new motor had been perfected and tested by a 700-hour continuous run on the blocks. Ten engines were built and plans were made to enter production. It was decided then to move the plant to a site adjacent to the Martin company's plant on the Middle River, Baltimore. For the present, according to Glenn L. Martin, the engines will be built in a section of the aircraft factory. Later a separate building for the motor plant will be erected.

The motor designed by Chevrolet is a four-cylinder inverted type, capable of developing between 90 and 100 horsepower, and 1,900 to 2,000 revolutions per minute. It is radical in construction, differing from air-cooled motors for light planes now in production. Location of the cylinder heads underneath the main body of the motor, instead of in a circle around it, makes for a better stream line in airplanes, and the lack of weight adds to its performance in light sport planes. The Martin company is experimenting on designs for a sport plane to be built around the Chevrolet engine.

Bennett Now Curtiss Manager at Bowman Field

Major John C. Bennett, Jr., formerly with Curtiss Flying Service, Nashville, and commander of the 105th Squadron, Tennessee National Guard, has recently taken charge of the Curtiss Flying Service plant, on Bowman Field, Louisville, bringing most of his own organization with him from Nashville, and including Lieut. James H. Douglas, as operating manager; Lieut. Harry H. Jones, of Nashville, as chief instructor; and James L. Wilson, as chief mechanic.

Maj. Bennett succeeds Ted Kincannon, at Louisville. The latter was general manager of the Cardinal Fliers, Louisville, and when this organization was taken over by Curtiss, he became vice-president and general manager.

Louis Carver, one of the Curtiss pilots at Louisville, has been transferred to New York; while Bill Walden, has taken a private pilots post with Churchill Humphrey, sportsman, of Louisville, who recently became a licensed pilot, and who has purchased his second plane. Hugh Daniels, pilot in the old organization, remains at Louisville. W. B. Allen, of New York, has become sales manager.

STATISTICS for 1929 revealed that 1,361 active flying students enrolled in the Curtiss Wright Flying schools and flew a total of 36,649 hours 47 minutes without a single fatality or accident of major importance. These figures cover activities in the chain of forty schools operated by the Curtiss Wright system, and it is estimated that the more than 1,000 students covered a distance by air transportation of approximately 3,000,000 miles.

New Parachute School at Baltimore

Baltimore will soon have what is believed to be the first school of its kind in the world—a school for the training of parachute workers, repairers and inspectors, according to an announcement by Lieutenant George W. Rogers, head of the Maryland National Guard Unit, who will be president of the new school. This new school was expected to be opened the latter part of February or early March at 1411 South Hanover street. Lieutenant Rogers is said to be recognized as one of the few parachute experts in the United States.

Captain Walter C. Davis, president of the Davis Aircraft Corporation of Richmond, Indiana, recently flew a Kinner motored Davis D-1-K to Los Angeles for delivery to the Davis distributor there. En route to Los Angeles, Captain Davis stopped at Fort Worth and established distributor connections for Texas and Oklahoma. Returning, he traveled the Western Air Express from Los Angeles to Seattle, visiting the Washington Air and Transport Corporation, Davis distributors in the Seattle territory. Captain Davis made practically the entire return trip to Richmond by air, a distance of approximately 4000 miles.

New Requirements for Pilots Carrying Paid Passengers

"Holders of limited commercial and transport pilot's licenses from the Department of Commerce hereafter will not be permitted to carry passengers for hire in licensed aircraft unless they have obtained, in addition to their pilot's license, a 'Pilot's Rating Authority' from a Department aeronautical inspector in the field," Clarence M. Young, Assistant Secretary of Commerce for Aeronautics, recently announced.

"This action by the Department of Commerce in amending the Air Commerce Regulations is designed to guard against any accidents or mishaps that may result to paid passengers and the pilots as well, if the pilots attempted to carry paid passengers in a type of aircraft with which they had little or no experience.

"The pilots themselves under the new amendment do not have to apply to the Aeronautics Branch in Washington but will contact a Department aeronautical inspector in the field, make known the types of ships in which they have been carrying or contemplate carrying paid passengers; stand a test as to their ability to handle these types, and otherwise demonstrate their familiarity with the characteristics of the aircraft in question."

Barling Distributor at Waco, Texas

Air Services, Inc., has recently been organized at Waco. Texas with an initial capital of $12,000. An airport has been purchased and is being equipped and developed with the intention of making it the best and most attractive in central Texas.

The Barling NB-3 plane will be handled. A contract has been made with the Nicholas-Beazley Airplane Company, Inc., of Marshall, Missouri, manufacturers of the plane, for twenty-two planes. Three of these are for immediate delivery and to be one of each of the planes carrying approved type certificates from the Department of Commerce equipped with the LeBlond, Velie and Genet.

Plane Takes Off to Map Eastern Venezuela

PILOT L. E. Shealy and John Nelson, mechanic, took off in a Sikorsky amphibian from Newark Airport early in February bound for Maturin, Venezuela, on an aerial mapping expedition. Philip M. Houston, radio operator, and W. K. Wolford, photographer, completed the ship's personnel.

The amphibian was purchased by the Creole Petroleum Corporation, a subsidiary of the Standard Oil Company of N. J., for use in Venezuela. One of the ship's first tasks will be to make a series of survey flights, recording observations from the air in map form with the aerial camera. Maturin will in all probability be used as a base in these flights. Incidentally, the Sikorsky will cut down the traveling time between the company's stations at Maturin and Marachaibo from a week or ten days to about six hours.

The Creole, a Sikorsky amphibian being used by the Creole Petroleum Corporation on a mapping expedition in Eastern Venezuela

New Sales Record at Parks Air College

Sales of flying and mechanical courses at Parks Air College of St. Louis reached a peak in the month of January with a total of more than $155,000 business contracted. The newly organized national direct sales force contributed in a large measure to the exceptional sales record established during this month. The national direct sales force has been organized to sell aviation courses by personal contact and now includes branch offices in Chicago, Ill., Dallas, Texas, Toledo, O., Birmingham, Ala., New York City, Denver, Colo., and Louisville, Ky. Ernest M. Crosby, a graduate of Parks Air College is head of the national sales force.

Organization Plans of Globe Aero Service Bureau

The Globe Aero Service Bureau, of Kansas City, Mo., organizing a national aircraft labor association, is concentrating all efforts on placing its plans in the hands of every licensed pilot and mechanic as well as student pilot and apprentice in the country.

The results have been highly gratifying, according to L. H. (Jack) Atkinson, who is heading the organization work. During the latter part of January Atkinson met with groups of pilots and mechanics in and around Chicago in an effort to form a nucleus around which the national association will be formed. He reported an approximate membership of 200 in Chicago.

Dale (Red) Jackson of "St. Louis Robin" fame and the other organizer of the movement, has been touring Florida, following the Miami air meet, in an effort to place the plans of the association before as many prospective members there as possible. He has reported unusually encouraging results.

Voting by members so far has indicated that approximately 99% are in favor of an optional insurance plan. While the insurance division of the association has not been worked out in detail as yet, it is planned that members will be offered insurance at a very low rate covering temporary and total disability, sickness and death, according to Mr. Atkinson.

Observation Squadron Holds Banquet

The 106th Observation Squadron, Alabama National Guard, Roberts Field, held their annual birthday anniversary banquet recently at the Thomas Jefferson Hotel in Birmingham at which time they were host to a score of high aviation officials over Alabama and Georgia.

W. V. M. Robertson, former commander of the squadron in its earlier days, acted as toastmaster. Maj. Sumter Smith, commander of the Thirty-First Division Air Corps, reviewed the history of the Roberts Field unit and stated that although the division had put in 8,100 hours in the air, there had been no fatal accidents during that time. This was since 1925, and in the entire eight years of the organization with more than 11,000 hours of flying there have been only two accidents.

Adj. Gen. Eugene F. Butler commended the Roberts Field unit for their part in the Alabama flood relief work. City Engineer A. J. Hawkins, told of the plans now being perfected for a municipal airport in Birmingham and pointed out that airports were proving safe investments all over America. In stressing this he said that Tulsa's airport paid a dividend of eight per cent in 1929 and that the Los Angeles airport paid 16 per cent on an investment of $1,500,000.

Curtiss-Wright Opens Washington Branch

Under the supervision and management of the Baltimore branch, the Curtiss-Wright Flying Service has opened a branch in Washington, D. C., according to an announcement made by Major William D. Tipton, manager of the Baltimore branch. The Washington branch consists of a ground school and airplane sales department. All flying students will be brought to Baltimore for training. The ground school classes will be held in the Y. M. C. A. building in Washington, while arrangements have been made at Hoover Field for the use of that field for demonstration purposes of airplanes. The Washington offices of the Curtiss-Wright Flying Service will be in the Southern Building. C. W. McGaughey will be in charge of the ground school operations, and C. W. Carnan will be in charge of the airplane sales staff of the new branch.

A new booklet on airport construction has been prepared by the Airports Engineering and Construction Corporation, a unit of the Southern Air Transport. The Book is intended for prospective airport builders, and contains plates illustratng typical problems in airport design.

The Montgomery School of Aeronautics has secured the distributorship for the Nicholas-Beazley, Barling NB-3. A contract for twelve of the low-wing, all-metal planes is being filled by the factory for the school.

Additional Service to Mexico City

A NEW passenger line from Houston to San Antonio, offering expedited air-rail service from New Orleans to Mexico City and through air service from Houston to the Mexican capital, was inaugurated January 24 by the Southern Air Transport division of the Aviation Corporation.

Flight schedule of the new line offers service of 10 hours and 30 minutes from Houston to Mexico City, 38 hours from New Orleans to the Mexican capital and 24 hours from Mexico City to New Orleans.

Schedules on the Dallas-to-Brownsville line of the company, which passes through San Antonio, are correlated with those of the Houston line in order that passengers from Houston for Brownsville can make connection at San Antonio with only 30 minutes layover for lunch.

Service to San Angelo, Texas, also is made available by connections at San Antonio with the Cromwell Air Lines.

The westbound Houston-San Antonio plane leaves Houston at 10:30 a. m. and arrives in San Antonio at 12:45 p. m., simultaneously with the ship from Dallas on the Dallas-Brownsville route. This latter ship leaves for Brownsville at 1:15 p. m., arriving at its destination at 4:30 p. m. An overnight stop is made at Brownsville and the passengers then take the Pan-American Airways plane at 8:15 a. m. for Mexico City.

The eastbound San Antonio ship leaves San Antonio at 4 p. m., arriving at Houston at 6:15 p. m. Through service from Mexico City to Houston is provided by connections at San Antonio with the northbound plane on the Dallas-Brownsville line.

Air-rail travelers from New Orleans to Mexico City depart from New Orleans by train at 11 p. m. and transfer at Houston to the new line running to San Antonio where they follow the same schedule as described for Houston passengers into Mexico City.

On the return trip the traveler leaves Mexico City at 7:45 p. m. and connects with the Southern Air Transport line at Brownsville and arrives in Houston at 6:15 p. m. He then transfers to train leaving Houston at 9:30 p. m., arriving in New Orleans at 7:50 the next morning.

The inaugural plane on the Houston-San Antonio line was a Travel-Air 6-place cabin job, powered with a single 300 horsepower Wright engine. It is known as The Mission-Aire, honoring the mission city (San Antonio).

The new fare of five and one-half cents a mile, which went into effect the week of January 13 over all Aviation Corporation lines, applies on the new line, making the fare from Houston to San Antonio $10.80.

Speed Record For Passenger Ships

A new speed record for passenger ships was set about the middle of February by Pilot Cavander on the second flight of the newly inaugurated American Airways service from Dallas-Fort Worth to Cleveland and New York. Cavander made an average speed of 156 miles an hour. The record was established on the Fort Worth to Tulsa leg of the route. Taking off at the Fort Worth airport in a Fokker F-10 tri-motored plane at 8:05 o'clock, Cavander brought his ship down at the Tulsa port one hour and 35 minutes later.

The new line, which provides 26-hour service from Texas to New York, was inaugurated February 9. The Fort Worth to Cleveland leg of the journey is made by air; the Cleveland to New York stage by rail.

Readjustment of Air Mail Rates Is Urged

Immediate and favorable action on House Resolution 9500 providing for a readjustment of the present contract air mail system is being urged by the Aeronautical Chamber of Commerce of America, Inc.

House Resolution 9500 proposes the payment of compensation of transporting air mail at fixed rates per mile for definite weight spaces, but not to exceed $1.25 per mile, instead of the present poundage basis with a $3.00 pound limit. It also proposes a reduction of air mail postage rate.

The new act would permit the Postmaster General to utilize space for the transportation of other mail matter than air mail, if the quantity of air mail available was less than necessary to fill the weight space contracted for by the government. It would make possible a revision of the air mail postage rate to five cents for each ounce or fraction thereof instead of the present rate of five cents for the first ounce and ten cents for each additional ounce.

Hetherington with S. A. F. E. at Fort Worth

Fred Hetherington has been placed in charge of the Fort Worth traffic office of Southwest Air Fast Express. He is formerly from St. Louis and has had four years experience with National and Transcontinental Air Transport.

Maryland's 1929 Record in Commercial Flying

THAT the general public is beginning to patronize aviation in a substantial manner is indicated by the flying patronage and flying mileage of Maryland, particularly Baltimore, during the year 1929. During last year 8,000 passengers were carried 300,000 miles, according to the approximate figures on commercial flying in the State. Prior to last year, Marylanders indulged in very little passenger flying. The most interesting phase of the commercial flying for 1929 is that no major accidents or mishaps more seroius than a flat tire or a splintered propellor occurred. This is an enviable record.

That aviation is a growing business in Baltimore and throughout Maryland is apparent. Flying facilities established during the past year indicate the year 1930 will greatly surpass that of 1929. There are at present four operating airports in or near Baltimore; three great fields are under construction, and transport companies in Hagerstown, Cumberland, Eastern and Salisbury besides numerous smaller fields are used for flying outside of Baltimore.

Last year over 150 pilots were trained in the training schools of Maryland, virtually all of which are located in Baltimore. One of the local technical schools reports that 87 pupils are being trained as aviation mechanics, and last year, aeronautical ground students numbered well up to four hundred. The interest in flying is indicated by the number who are taking up aviation. Many business men are taking it up, and schools and colleges are inaugurating or have established aviation classes. All of this is in addition to that important phase of aviation, the establishment of aircraft manufacturing plants.

Russian Aviation Group Tours the South

WITH a view of purchasing aircraft in the United States to assist in carrying out an aeronautical program in Russia calling for a doubling of the present air mileage by 1933, the Russian Aviation Commission, headed by Peter Ionovitch Baranoff, president of the Civil Aviation Council of the United Soviet Socialist Republics, have just completed a six-weeks' tour of flying fields in all parts of this country.

Two other leading figures in the commission of eight members are Leonid Gregorievitch Gershevich, representing the aviation department of the Amtorg Trading Corporation, and Professor Andrei Nikolasvich Toupoleff, chief of the Central Aerodenomical Academy of Russia, and designer of the "Land of the Soviets," the Russian two-motored plane which recently made a successful flight from Moscow to New York.

The commission is making a thorough survey of aviation and training methods in the United States to be used as a basis for the recommendation of purchases here through the Amtorg Trading Corporation, commercial representative of the Russian government.

During a recent visit to San Antonio, Texas, the commission inspected three government airports, Kelly Field, Brooks Field and Randolph Field, and also the municipal airport, Winburn Field. They were greatly impressed with conditions as they found them at the San Antonio airports, declaring they are the most modern they have yet seen, while a high degree of efficiency is evinced in training of army pilots.

They declared that the country surrounding San Antonio is almost identical with that in Russia, with many things bearing striking resemblance.

Doubling of the present air mileage by 1933 cannot be fulfilled by Russian factories alone, it was stated by Gerschevich, who serves as interpreter for the commission members.

At present there are 8,500 miles of air line in Russia, reaching from Moscow to Berlin, Persia, Turkestan and Irkutsk, Siberia. The Irkutsk line will be extended to Vladivostock this year, Gershevich said, while an auxiliary line already reaches from Irkutsk to Yakutsk, where the Lana gold mines are located.

Gershevich also declared that air transportation is the greatest factor in linking the 22 republics that make up the U. S. S. R. and give a common bond to the 42 different nationalities.

Russian aviation group, left to right: Leonid Gregorievitch Gershevich, Peter Ionovtich Baranoff, and Prof. Andrei Toupoleff

Following their three-day visit at San Antonio, the group left for Pensacola, Fla., to inspect the naval flying station before proceeding to St. Louis to attend the National Aeronautical Exposition, February 15 to 25.

The commission members have been to Germany and France on their present tour, and after a visit throughout the United States, will inspect England's airports before returning to Russia.

Charlotte Firm's Contract for Wind Tunnel

A $500,000 contract for construction of a wind tunnel at Langley Field, Va., was awarded to the J. A. Jones Construction Company of Charlotte, N. C.

Sub contract for structural steel in the contract was awarded to the Southern Engineering Company of Charlotte. Expenditures for this phase of the job will amount to approximately $225,000.

Work on the project will start within a short time and will be completed during 1930, construction company officials state.

Wichita Manufacturers Back Central Air College

The Central Air College which will replace the Universal Flying School in Wichita was granted a charter recently by the state charter board. The school's organization is completely local, having been started on a basis of $100,000 in stock all of which has been subscribed.

Organizers of the college are E. A. Watkins, E. H. Hutton, R. D. W. Clapp, W. E. Stanley and J. H. Turner, all of Wichita.

Most of the stockholders are from among Wichita's pioneer backers of aviation and include Walter Beech, president of Travel Air and Curtiss Wright Sales Corporation; R. D. W. Clapp, president of Watkins Aircraft Manufacturing Company; W. M. Moore, president of Swallow Airplane Company; W. R. Snook, general manager Travel Air Manufacturing Company; J. H. Turner, vice president Travel Air Manufacturing Company; E. A. Watkins, president Central Airlines Division Universal Aviation Corporation and vice president of Watkins Aircraft Company; Charles E. Parr, general manager Coleman Lamp and Stove Company; and John Kirkwood, president of John Kirkwood, Inc.

Detroit Aircraft Opens Fort Worth Offices

The Detroit Aircraft Corporation, one of the four largest aviation holding companies in the United States, will establish Southwestern headquarters in Fort Worth, Texas, it was announced recently. H. A. Freeze was appointed southwestern manager in the Lockheed division of the corporation, with Fort Worth offices, and J. Wallace Williams district manager of the Parks division.

Credit for Photograph Used in January 15th Issue

In our January 15th issue, in connection with an article on "Plans for the St. Louis Aircraft Show," appeared an aerial photograph of the St. Louis Arena, scene of the recent International Aircraft Exposition. This photograph was made by Wings Photo Service, of St. Louis, Mo., but inadvertently a credit line to this organization was omitted. Wings Photo Service was the official photographer for the recent aircraft exposition and is recognized as among the leaders in aerial and commercial photography.

Cone Urges More Activity by Airplane Dealer

MAJ. J. CARROLL CONE, recently appointed sales manager for the American Eagle Aircraft Corporation, in the last five months spent nearly 470 hours in aircraft touring the United States visiting airplane dealers. In the course of this tour he formed many ideas, many plans for bettering selling methods.

"I find the average airplane dealer," says Major Cone, "is entirely too prone to sit in his hangar office and let the business come to him. Of course, the result of such a system is failure. The airplane salesman has to get out and work and work hard. He has to create a market for his goods. Very few sales are made to people who are standing there, money in hand waiting for the salesman.

"The motor car dealer is the ideal aircraft salesman. He has the floor space to properly display an airplane in the place where people will see it. There are more people, almost 100 to 1, on the city streets than at the airports and if we can bring the planes to them we can make a big step toward selling them.

"The motor car dealer also is in the business of selling transportation. He knows the angle of attack for this problem and he also has the mechanical setup necessary for servicing planes. More and more we are finding motor car dealers getting into this picture. I believe this will be one of the big trends of the sales fields this year."

Consolidated Adopts New Sales Policy

A new sales policy under which each dealer will be obligated to take a minimum of three planes to obtain dealer discounts of 25 per cent is announced by R. W. Fulton, sales manager of Fleet Aircraft, Inc., of Buffalo.

"All of our distributor's contracts have expired," Mr. Fulton says in announcing the new policy, "and will not be renewed as such. We have eliminated closed territories and are now offering non-exclusive dealerships in limited areas throughout the entire country. All dealers are required to post a $500 deposit per plane for a minimum of three planes at the time dealership is granted. These deposits are returnable as and when deliveries are taken, $500 per ship. Deposits are not required beyond the third ship."

New Courses Announced by Parks Air College

Three new postgraduate courses open only to licensed transport pilots are announced by Parks Air College. One of them gives the student thirteen hours instruction on a Wasp-powered Ford tri-motored monoplane including ten hours of solo. Another includes four hours dual instruction and ten hours solo in night flying and a third gives the graduate student three hours dual and ten hours solo instruction in a Ryan brougham powered with a 300-horsepower Wright-Whirlwind. The courses are added in response to a demand by transport pilots for training qualifying them for the new Federal classifications which became effective recently.

R. Ernest Tucker, Service Manager for Kinner Airplane & Motor Corporation, is making an extensive tour of the entire United States, calling upon the distributors and dealers of Kinner parts.

Glider Clubs Organized Over the South

Much interest and enthusiasm is being shown in the recently organized Glider Club at Statesville, N. C. The club has a charter membership of twenty, which is composed mainly of senior high school students and young business men of the city.

A thirty-six-foot wing spread Eaglerock glider has been purchased and instructions will begin immediately upon its arrival at the Statesville Airport.

The first exclusive glider airport to be built in the United States will be constructed by Frank Kutchins on a tract near Creve Cour Lake in St. Louis. A glider club with more than fifty members has been organized by Mr. Kutchins, and will make the new glider airport the base for their training activities. A new word "Gliderport" has been coined as a result of the establishment of the new field.

Organization of a Glider Club at Houston has been completed. A glider from the Eaglerock factory at Colorado Springs will be available for use of the club members.

A glider club has been organized at Winston-Salem, North Carolina. Plans are under way by members of the club to purchase a glider of the primary type for preliminary training activities.

Henry Frese has become sales representative for the Lockheed Vega in the southwest. Frese will establish headquarters in Fort Worth, and will cover his territory in a new Lockheed-Vega demonstrator.

Problems of International Flying

(*Continued from page* 28)

ference was held in Havana where the Convention was signed by the various delegates and it is now subject to ratification by the various countries involved.

More recently—June, 1929—an extraordinary session of the International Convention was held in Paris. Its apparent purpose was to discuss changes in some of the existing provisions, removing certain phases which had not been unanimously acceptable, and thus eliminate the necessity for other conventions or agreements such as the Pan American Convention just referred to.

The point to be made is that there is need for complete international accord in the matter of aircraft operation for commercial purposes, as well as for uniformity in rules and regulations pertaining to that operation. Until such time as this is accomplished, various countries will doubtless continue to effect individual reciprocal agreements much the same as the United States and Canada. However, as previously indicated, an immense amount of effort has been put forth in an attempt to reconcile the various existing requirements and an agreement which can be made universally acceptable seems now more nearly a possibility than ever before. Naturally it will provide for such matters as airworthiness requirements, customs, entry and clearance, and other related items.

Latest Developments in AIRPLANES AND ACCESSORIES

Features of the New Ryan Foursome

THE new Ryan Foursome is designed for the use of business executives, sportsmen, or private owners, and incorporates many new features both in technical design and arrangement of the cabin. The plane has been built to give an unusual amount of room in the cabin, and special attention has been paid to the upholstery and arrangement of the seats.

The back of the front seat folds down, joining the seat behind, forming a comfortable lounge on which the air traveler may take a comfortable nap. The other seats are all adjustable to several reclining positions, and the pilot's seat may be regulated to the easiest control position. All seats are deeply and luxuriously upholstered.

A new control system has been designed for the new Foursome. No cables or other control mechanism are above the floor, giving a clean appearance to the cabin. The second stick for instruction purposes may be inserted in a few moments.

The elevator is operated by means of a positive push pull control system acting inside the fin. Ample bearing surfaces and Alemite lubrication fittings are provided for all moving parts. A new type stabilizer adjustment operating on a fine tooth ratchet allows exact balancing of plane for various loading conditions . A feature of this mechanism is its greater ease of operation due to the use of a bell crank entirely enclosed within the fuselage. The aileron cables operate on ball bearing pulleys with plenty of leverage to give unusual ease of control and a sensitive stick.

The new Ryan Foursome, a four-place cabin plane designed for business and pleasure flying. Powered with Wright Seven

The wing is made in two panels for greater ease in handling. Steel, cadmium plated ribs are used throughout, in conjunction with steel tie rods and dural section compression members. The leading edge is covered with mahogany plywood back to the front spars.

The fuselage is built of chrome molybdenum steel tubing so engineered that no bracing is required in the cabin. All welding is done in jigs to insure precise accuracy.

Non-shatterable glass is used throughout, and the large easy opening windows give an unusually wide range of vision to both passengers and pilot. Other equipment includes a special oil cooler, shock absorbers, and a complete indirectly lighted instrument board.

The standard model is equipped with the J-6 seven cylinder Wright Whirlwind motor, but is stressed to carry any other power plant up to 300 H. P. including the Wasp Junior and the Wright J-6 nine cylinder.

One of the outstanding features of the plane is its inherent stability.

A new Spartan model, the Comet powered C-3-166

Spartan Announces New Three-Place Biplane

SPARTAN Aircraft Company recently announced production of the new Spartan C-3-166 powered with the Comet 7-cylinder 165 h. p. engine, which has been awarded Approved Type Certificate No. 290. This is the third biplane of the Spartan line to be offered, the others being the C-3-225, powered with the Wright "Whirlwind Seven", and the C-3-165, powered with the Wright "Whirlwind Five."

Specifications on the C-3-166 are as follows:

Type: 3 place, open land biplane.
Power Plant: Comet, rated 165 h. p. at 1,900 r.p.m.
Construction: Fuselage, welded chrome steel tubing, fabric covered; wings, Clark Y airfoil section. Spruce I beam spars. Ribs, spruce, fabric covered.
Areas: Wings, (inc. ailerons); upper, 151 sq. ft., lower, 140 sq. ft.
Weights: Empty, 1,617 lbs. Useful load, 968 lbs. Pay load, 370 lbs. Gross weight loaded, 2605 lbs. Wing loading, 8.9 lbs. per sq. ft. Power loading, 15.8 per h.p.
Performance: High speed, 115 m. p.h. Landing speed, 49 m.p.h. Cruising speed, 92 m.p.h. Climb (at sea level), 800 ft. per min. Service ceiling, 11,000 ft. Cruising range, 550 miles.
Price. $5675, at Tulsa.

New Curtiss Kingbird Cabin Limousine

ONE of the outstanding planes in the big Curtiss-Wright display at the St. Louis Aircraft Show was the Curtiss Kingbird, the seven or eight place twin engine cabin limousine, representing the first plane of its class ever designed and the most radical departure from planes hitherto accepted as standard, it is said.

The Kingbird is the result of more than a year of engineering effort in the experimental laboratory of the Curtiss Aeroplane and Motor Company at Garden City, New York. In experimental flight the new plane was found to have high speed of 135 miles an hour and a comfortable cruising speed of between 115 and 120 miles an hour. It has a cruising range of 442 miles and an absolute ceiling of approximately three miles. It is powered with two Wright Whirlwind engines.

The plane while economical in first cost operation has many of the advantages of the larger transports in comfort and multi-engined safety.

It is expected to become popular as a feeder carrier for larger airlines, for sightseeing and for transport service on lines on which traffic does not justify the use of larger ships.

Absence of an engine in the nose of the plane eliminates noise and and gasoline fumes in the cabin. The two Whirlwind motors are mounted in outboard nacelles beneath the wings. A full load may be carried on either engine reducing the hazard of forced landings to a minimum.

Unusually large windows of nonshatterable glass provide excellent vision for passengers. The walls are upholstered in leather up to the window line and in cloth above. Trimmings are in walnut. A carpet covers the floor.

Ventilation and steam heating are provided. The walls are insulated against cold and noise by a special material installed between the upholstery and outer covering.

The new plane is completely equipped for night flying, having landing lights retractable into the fuselage cowling, navigating lights, instrument board lights, and dome lights in the cabin.

Specifications are as follows:

Type, 7 or 8 place cabin monoplane.

Dimensions: Length overall, 34 feet, 9½ in.; height overall, 10 ft.; span overall, 54 ft. 6 in.; cord, upper, 100 ins.; incidence, 1 degree; dihedral, 3½ degrees; sweepback, 0 degree.

Areas: Wing area including ailerons, 405 sq. ft.; aileron area, 54.2 sq. ft.; horizontal tail, 65.4 sq. ft.; vertical tail, 28.9 sq. ft.; elevators, 26 sq. ft.; rudders, 20.2 sq. ft.

Weights: Weight empty, 3,824 lbs.; useful load (normal), 2,000 lbs.; crew, 340 lbs.; fuel and oil, 690 lbs.; payload with 120 lbs. baggage, 970 lbs.; gross weight, 5824 lbs.

Power plant, 2 Wright Whirlwind engines rated 225 h.p. each.

Performance: High speed, 135 m. p.h.; cruising speed, 115-120 m.p.h.; rate of climb, 900 ft. per min.; endurance, 85 per cent max. throttle, 3.95 hrs.; range, miles, 325 miles on full throttle; range, at cruising speed, 442 miles; service ceiling, 14,700 ft.; absolute ceiling, 16,500; climb in 10 min., 6,700 ft.; gas capacity 100 gals.; stalling speed 63.5.

The Stearman Light Transport powered with Hornet 525 h. p.

New Stearman Light Transport Plane

THE Stearman Light Transport, powered with 525 horsepower Pratt and Whitney Hornet engine, carries a pay load of 1270 pounds, with accommodations for four passengers in cabin, in front of which is mail or baggage compartment providing space for 600 pounds of mail or express. The pilot occupies an open cockpit in the rear of the cabin.

Top speed is 135 miles an hour, cruising speed 110 miles per hour and landing speed 55 miles per hour.

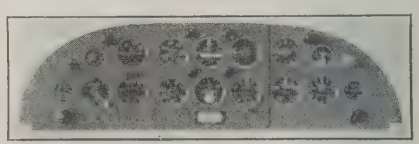
The ship is completed bonded and shielded for radio installation. Provision is made for night and blind flying. Maintenance is simplified, the cowling being removable to a point in the rear of the pilot's cockpit, thus exposing all control and fuel mechanism as well as making conveniently accessible all wiring, which is in conduit.

The pilot's instrument panel includes the following instruments: compass, air speed indicator, altimeter, tachometer, turn and bank indicator, rate of climb indicator, fore and aft inclinometer, 8 day clock and necessary engine instruments. The instrument board in the passenger cabin includes an air speed indicator, altimeter and an 8 day clock.

Pioneer Designs New Instrument Board

A new type instrument board has been brought out by the Pioneer Instrument Co., subsidiary of Bendix Aviation Corporation, which is described by its manufacturer as follows:

The instrument board contains an oil pressure gauge, a thermometer for oil and water, a dual ignition switch connecting either or both magnetos, a fuel level gauge and flow meter, an air speed indicator, a tachometer, and a turn and bank indicator.



New Pioneer Instrument board

The earth inductor compass which includes a generator and controller, is the outstanding feature of the board. Other features of the board are: An altimeter, a climb indicator, a clock and air distance recorder, voltmeter, ammeter and rheostats.

The aeronautical branch of the Department of Commerce has granted Approved Type Certificate number 288 to the Eastman Division of Detroit Aircraft Corporation. The company now has in production twenty Eastman flying yachts.

Alexander Announces New Type Glider

TO MEET the general demand for an inexpensive and sturdy glider the Alexander Aircraft Company, of Colorado Springs, Colo., launched production in January on a high-lift primary type glider known as the Alexander Trainer.

The new by-product is the result of President J. Don Alexander's conviction that the glider will be the means of introducing hundreds of thousands of Americans to flying and will convert a large percentage into prospective airplane buyers and student pilots.

Organization of glider clubs is being pushed by the Eaglerock sales organization of 176 distributors and dealers. A campaign has been launched to interest flying schools in installing gliders as "kindergarten" trainers for new students.

Unusual strength and lightness were obtained by using a welded fuselage of seamless chrome molybdenum steel tubing. The Alexander Trainer has a wing spread of 36 feet and 198 square feet of wing area. Designed to fly in thin mountain air it is expected to glide correspondingly better at lower elevations. A number of novices have made flights of over 1,000 feet and from 18 to 46 seconds duration from a fifty-foot hill near Colorado Springs.

Features of the Alexander glider include three roll shock absorbers cushioning the steel structure from the main oak skid, metal wing skids, a light steel seat adjustable fore and aft, and a novel prow hook automatic and voluntary in operation. The complete glider sells for $375.

A safety factor of 14.4 was shown in the wings in laboratory sandbag tests. Suspended by the flying wires an uncovered sample wing sustained a loading of 1,731 pounds without breaking.

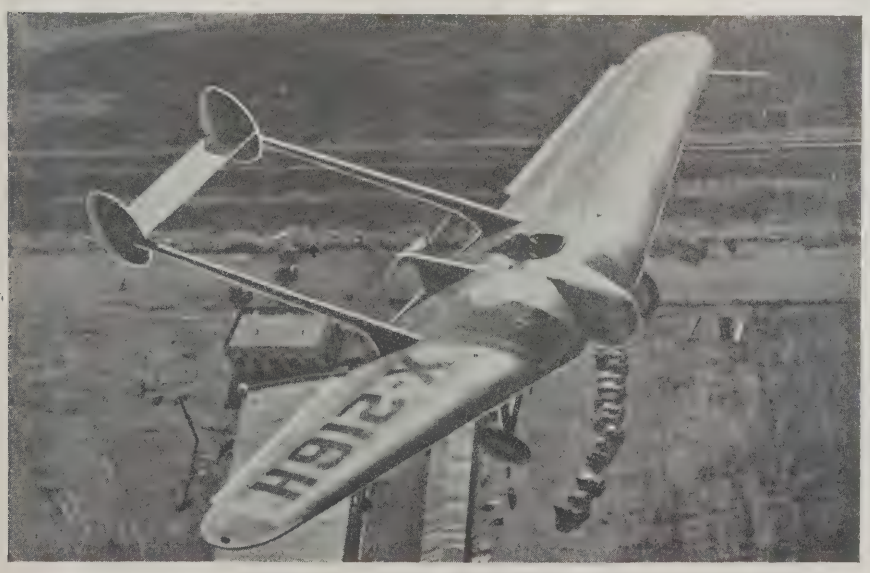
New Primary training glider made by Alexander Aircraft Co.

Features of Northrop Flying Wing

THE Northrop "flying wing" all-metal, all-wing monoplane, is shown herewith in successful test flights over the United Airport, Burbank, California. The revolutionary plane, without conventional body, and with landing wheels made retractable into the wing, develops 25 to 50 per cent greater speed with equal horsepower than conventional type planes, it is announced. Passengers, motor plant and all structural and control members, excepting tail surfaces, are carried inside the wing, reducing "parasite resistance" to minimum and turning "drag" into speed and performance.

Extensive developments of this type of plane have been authorized by W. E. Boeing, chairman of the board, and F. B. Rentschler, president, of the United Aircraft & Transport Corporation. John K. Northrop is the designer of the plane. Larger transport planes of this type, multi-motored, with sleeping berths and top speed of 200 miles an hour have been projected as the result of the test flights with the "baby wing."

Characteristics of experimental plane: Span, 30 feet; length, 20 feet; height, 5 feet; motor, 70 h. p. inverted in line; maximum thickness of wing, 3 feet.



The Northrop Flying Wing in flight

Arrow Announces the New Tangerine

Arrow Aircraft & Motors Corporation announces a new model ship to be known as the Arrow Tangerine to sell for $3,535. The Tangerine is powered by the new Lambert 90 h. p. motor manufactured by the Lambert Motor Co. at Moline, Ill., and will be produced in only one color combination, deep orange with a blue stripe. In construction it differs in only a few minor details from the Arrow Sport Trainer and the Arrow Sport Pursuit.

The Arrow Tangerine, which made its first public appearance at the St. Louis Show, was recently test flown at Arrow Airport, Inc., Havelock, Nebr., in an 18-mile headwind. With only the pilot in the ship, it took off in 50 feet and climbed 1,300 feet in a minute from the take-off at a 65 degree angle. Cruising speed was 100 m. p. h. and top speed 115 m. p. h., according to Arrow officials.

F. Pace Woods, Arrow Sales Manager, also announces that the Arrow will be available, during the coming year, with the Brownback and Warner Scarab motors. Model designations have been adopted as follows: Arrow Sport Trainer, LeBlond, Model 55, $3,131; Arrow Tangerine, Lambert, Model 66, $3,535; Arrow Pursuit, Brownback, Model 77; Arrow Sport Pursuit, Kinner, Model 88, $3,995; Arrow Pursuit DeLuxe, Warner, Model 99.

Lycoming 9-Cylinder Radial Engine

THE new Lycoming 9-cylinder radial aircraft engine is built for smoothness and quietness as well as reliability.

Horsepower rating of the new engine by the Department of Commerce is 210, although the engine develops considerably more, it is said. The weight of the new engine is 2.24 pounds per h.p. Strength has not been sacrificed to achieve lightness, but has been attained through the use of alloys and careful engineering and selection of materials, it is said.

Oil pipes have been dispensed with both the pressure and return oiling systems operating through cored or drilled holes in the castings. For smoothness and quietness the use of a quieting curve on the cam ring and has been employed and the rotary induction system for the even distribution of fuel to all cylinders adds to its smoothness of operation.

In cylinder design the new engine follows conventional lines for air-cooled engines. The cast aluminum alloy cylinder head with rocker arm supports cast integral is screwed and shrunk on a machined carbon steel barrel. A copper gasket is used between the head and barrel to prevent any leakage. The bore is 4 5-8 inches and the stroke is 4 1-2 inches, with a piston displacement of 680.4 cubic inches.

The crankshaft is of the two piece, clamp type design. The clamp proportions have been selected so that the tightening of the bolt will neutralize such stresses as are produced by the forcing of the clamped end over the crank pin. The shaft rides in three bearings, the ball thrust bearing and the two main ball bearings. The connecting rods consist of one master rod and eight link rods. The master rod is of one piece construction machined from a chrome nickel steel forging and provided with a steel back babbitt lined bearing. Aluminum alloy pistons are used. Piston pins made of nitralloy are used.

Ignition is furnished by one dual type vertical magneto with two independent distributors. Two entirely separate electrical currents are thus made available each firing one plug per cylinder. The whole ignition system can be easily shielded against radio interference, it is said. The Stromberg NA-R7 carburetor is used. The lubrication system consists of one pressure pump and two scavenging pumps built into one complete unit. The pressure pump supplies oil to the entire engine through drilled passages.

A new instruction book has recently been released by the Axelson Aircraft Engine Company, covering the Type "B" engine manufactured by that company. The book contains complete instructions for the construction and operation of the Type "B" engine together with a complete parts list. The book is neatly bound in durable flexible leather. Price, $2.00.

Lambert's New Light 85-90 H. P. Engine

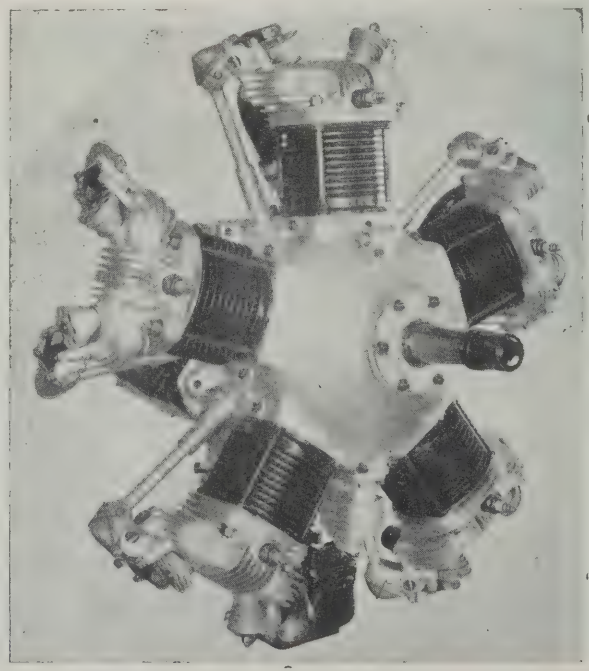
THE new Lambert Model R-266, a light 85 to 90 horsepower engine, has been designed for economy of operation and upkeep, and is said to afford owners of small sport planes a power plant of unusual performance. It has been awarded Approved Type Certificate Number 38.

The Lambert Aircraft Engine Corporation of Moline, Ill., built fifteen experimental engines before presenting the present model R-266 to the Department of Commerce, Aeronautics Branch, at Washington for an approved type certificate. The Department of Commerce Acceptance test of 50 hours on the torque stand and 115 hours in the air was passed successfully with a rating of 90 horsepower at 2375 r. p. m.

The model R-266 is successor to the Velie M-5. There is no material increase in the dimensions over those of the M-5 engine. The Model R-266 is 20 pounds lighter than the Velie. It possesses unusually clean lines and affords ease of cowling, due to the grouping of manifolding and valve gear back of the cylinders.

Some of the outstanding features of the Lambert Model R-266 are a new crankcase and cylinder construction; the use of light magnesium alloys, short stroke, and new intake and exhaust manifold design. Cylinder heads and pistons are of the same heat treated, heat resisting

Three-quarter rear view of new 210 h. p. Lycoming



Lambert model R-266, successor to Velie M-5

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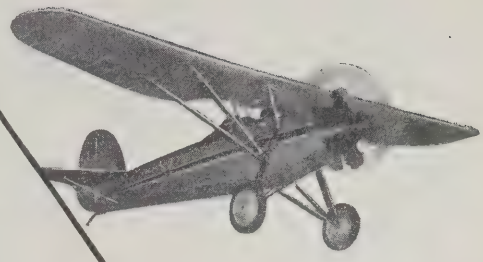

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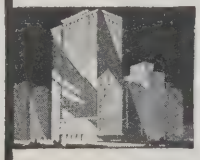

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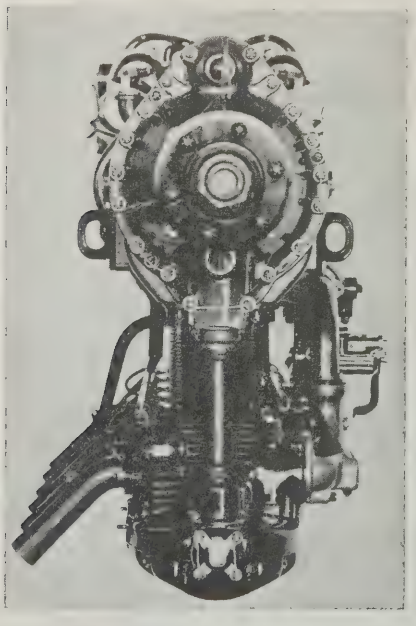
aluminum alloy. The two piece megnesium alloy crankshaft is split on a plane through the cylinder centers. The crankshaft is of the two piece, single throw type carried on three ball bearings, and with the one piece master rod is said to form an ideal combination for high engine speeds. The gearcase assembly is simple and removable as a unit.

Specifications of the Lambert Model R-266 follows: Type, air cooled, fixed radial. Number of cylinders, 5; bore, 4.25 ins.; stroke, 3.75 ins.; displacement, 266 cu. ins.; 85 h. p. at 2250 r. p. m.; 90 h. p. at 2375 r. p. m.; weight minus equipment, 214 lbs.; length over all, 30 3-8 ins.; diameter over all, 33 ins.; lubrication, pressure and dry sump; ignition, two Scintilla Mags.; carburetion, Stromberg NA-R3; spark plugs, two per cylinder; shipping weight, 420 lbs.

New Fairchild 6-in-Line Inverted Engine

A FEATURE of the Fairchild Exhibit at St. Louis was the new 6 in line, air-cooled, inverted Fairchild Engine. The International Aircraft Exhibition marked the first showing of the new engine by the Fairchild Engine Corporation.

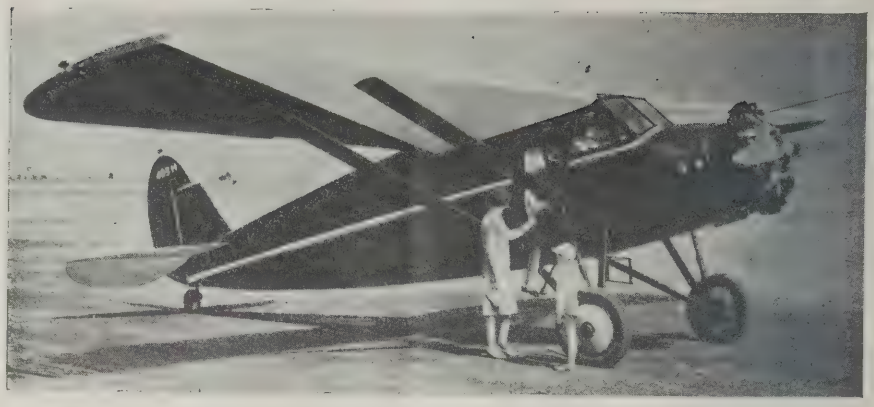
It is called Fairchild 6-390 and is rated at 120 h. p. at 2100 r. p. m.



New Fairchild Engine

The first engine of this type has been run on test stand over 200 hours, half of which were at full throttle, developing a maximum of 137 h. p. at 2350 r. p. m. without any noticeable sign of wear or any replacements, it is said. It has also been successfully flight tested in a Fairchild biplane. A new plane will be designed around this new engine by Fairchild.

Many advantages are claimed for this type of engine. Maximum visibility results from the inverted feature, while smoothness of operation is evident from the 6-cylinder in line design. Head resistance is reduced to a minimum because the frontal area is only one-third that of a radial engine of equal power. With this inverted construction the crankshaft has the highest possible location, thus giving maximum propeller clearance, and for this same reason the exhausts are located at the bottom, thus eliminating exhaust gas from the pilot's face and reducing noise to a minimum.



The new $5,775 cabin plane introduced by Stinson

Stinson Introduces New Cabin Plane

A new cabin plane was introduced to the public by the Stinson Aircraft Corporation during the St. Louis show, in the form of a four-place Stinson Junior cabin plane priced at $5775 The St. Louis show marked the first public showing of the new plane. It embodies the highest developments and improvements offered by the aviation industry, it is said, and places the use of cabin airplane in price competition with other forms of rapid transportation.

The Stinson Junior is equipped with an electric self starter, dual control, sound proof, heated and ventilated cabin, adjustable steel propeller, brakes, hydraulic shock absorbers and distinctive interior trimmings and fittings. The power plant is a 210 horsepower Lycoming engine. Both the interior and exterior finish is comparable to that found in a fine motor car.

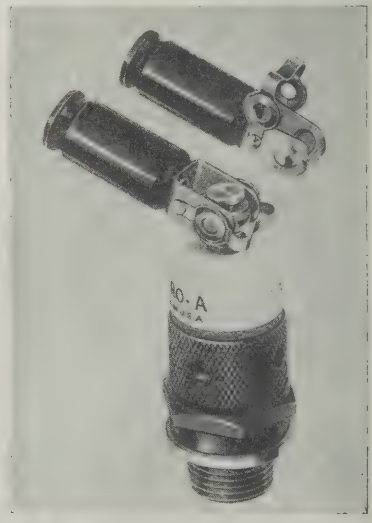
Five other Stinson models were on display at the show. Two of these models were also Stinson Juniors, one equipped with a 225 horsepower Wright engine, listing at $8,495 and the other, a sport model, equipped with 300 horsepower Wright and listing at $10,495.

New Ignition Terminal Is Announced

A new ignition terminal has been announced by the Tiffany division of the Connecticut Telephone and Electric Corporation of Meriden, Conn. It is a locking type spark plug cable terminal. Phosphor bronze jaws of the new terminal make perfect contact with the spark plug, it is said.

The contact is locked by a hinged bale which swings across the end of the terminal. Violent air maneuvers, rough landings, sudden propeller blasts or engine vibration will not loosen its grip, it is said. The terminal may be removed quickly, it is also said.

The new terminal has received approval number W-2203, issued after tests at Wright Field, Dayton, Ohio.



Tiffany ignition terminal

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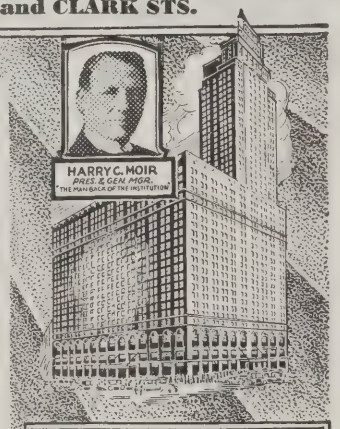

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Advertisers' Index

A

Aero Supply Mfg. Co., Inc. — *
American Aeronautical Corp. — *
American Eagle Aircraft Corp. — *
American Propeller Co. — 55

B

Bowman & Company — *
Braley School of Flying — *
Brunner-Winkle Aircraft Corp. — *

C

Carolina Metal Culvert Co., Inc. — *
Cessna Aircraft Co. — *
Consolidated Instrument Co. — *
Crouse-Hinds Company — 2 and 3
Curtiss-Robertson Airplane Mfg. Co. — *
Curtiss-Wright Flying Service — Back Cover
Curtiss-Wright Sales Corp. — Inside Front Cover

D

Detroit Aircraft Corp. — 1 and 4

E

Eastern Aircraft Supply Co. — 55

G

Gilmore Oil Co. — Inside Back Cover
Great Lakes Aircraft Corp. — 6

H

Harrison-Wright Co. — 53
Harry Bros Co., of La. — *
Heiss Hotel System — 53
Henley Publishing Co., Norman W. — *
Hotel Tuller — 55

I

Ingalls Iron Works Co. — 53

L

Logan Aviation Co. — 55

M

Metal Aircraft Corp. — *
Miami Air College — 55
Miami Airplane & Supply Corp. — *
Morrison Hotel — 56

N

New Standard Aircraft Corp. — *

P

Parks Air College — 1
Parks Aircraft Corp. — *

R

Ronald Press Co. — *
Russell Manufacturing Co. — *
Ryan Aircraft Corp. — 4

S

Service Steel Company — 53
Southern Air Transport Co. — *
Spartan School of Aeronautics — 53
Stanavo Specification Board, Inc. — *

T

Titanine, Inc. — 53
Travel Air Co. — Inside Front Cover

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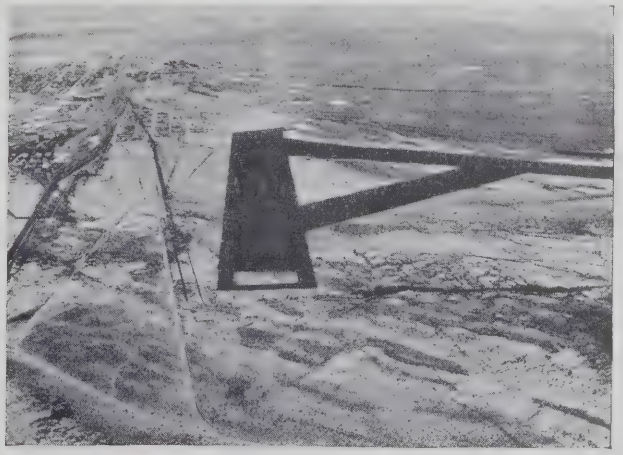

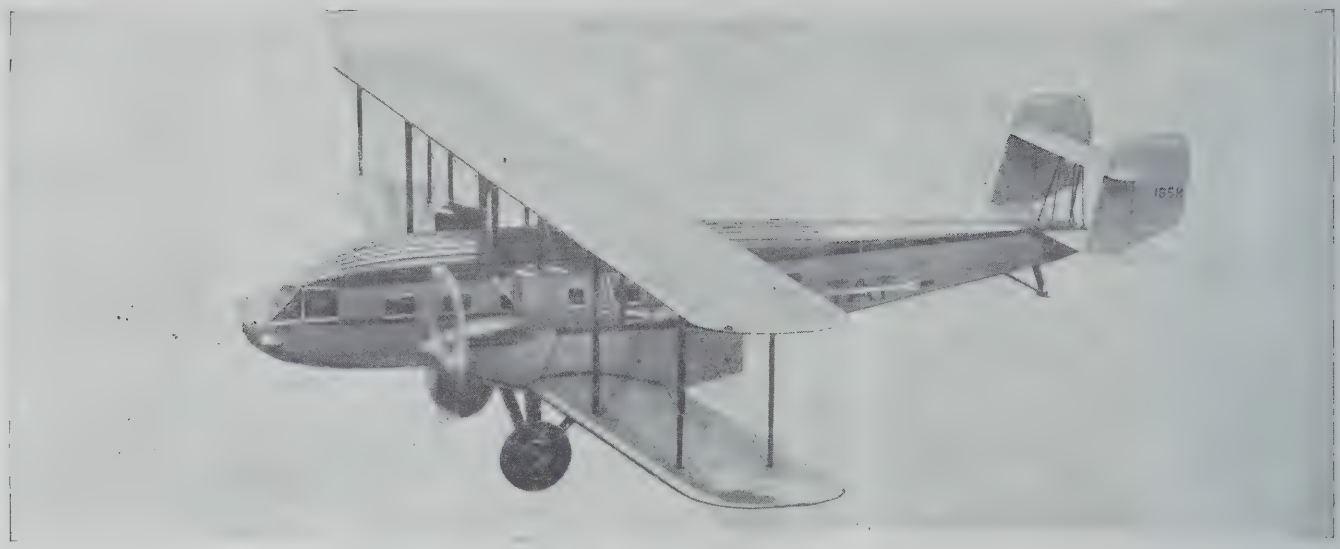

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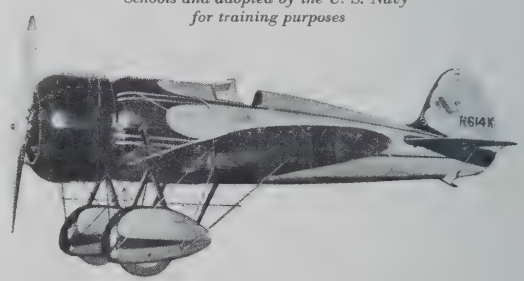

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When Shadows Grow Long Under Texas Skies

View of Southern Air Transport passenger plane enroute from Brownsville to Dallas.

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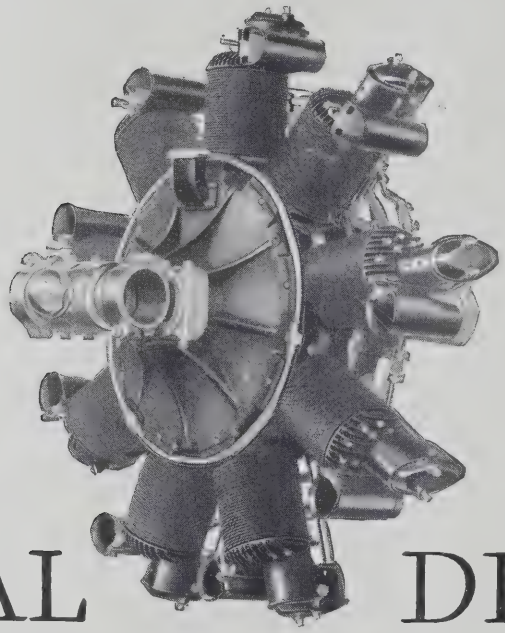

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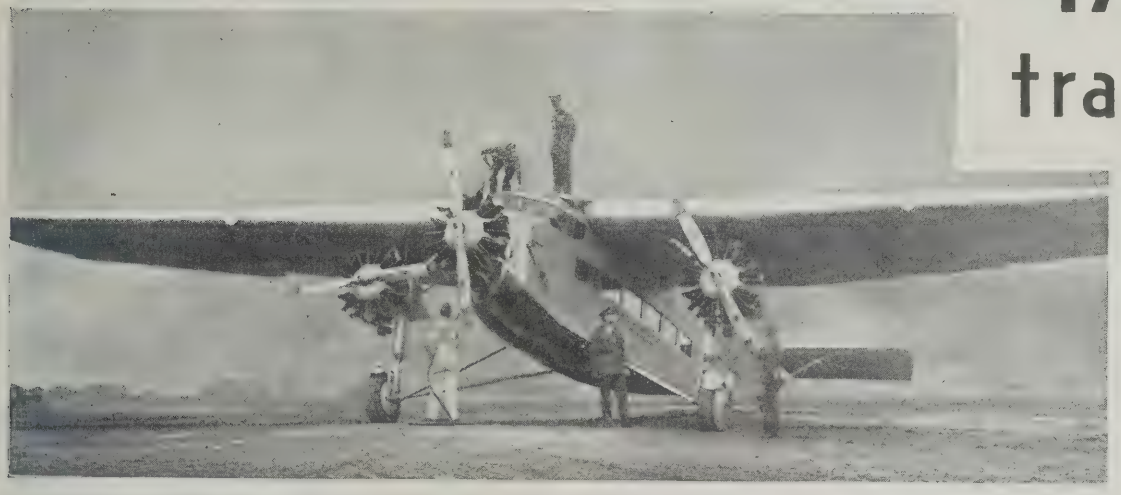

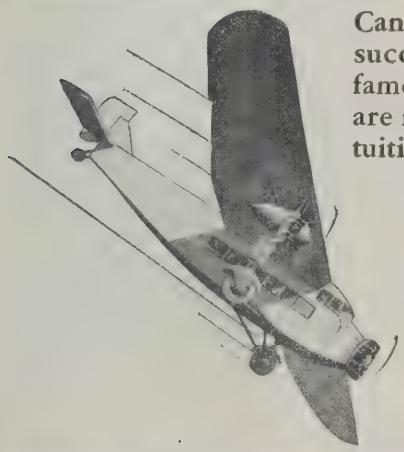

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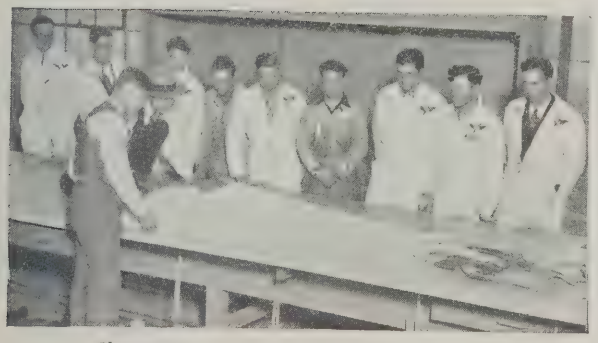

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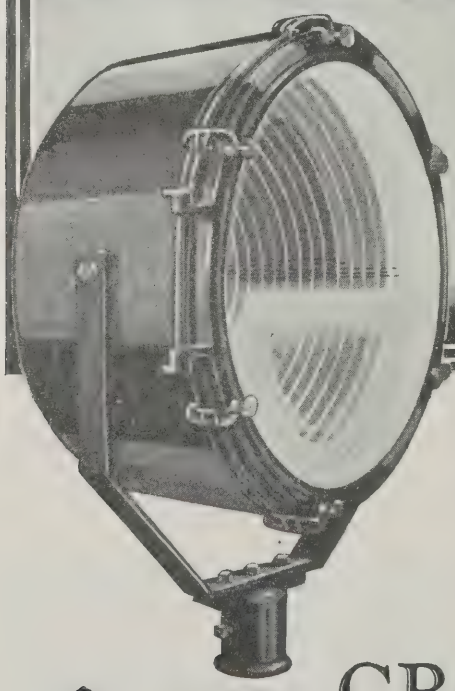

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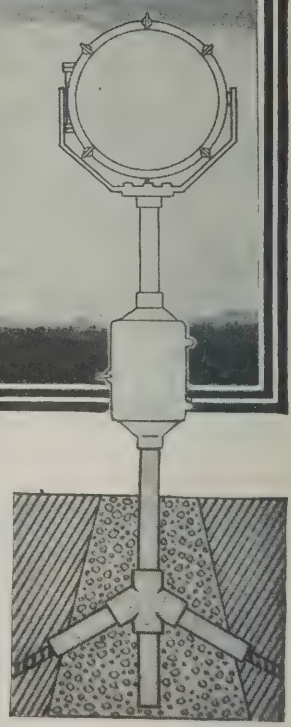

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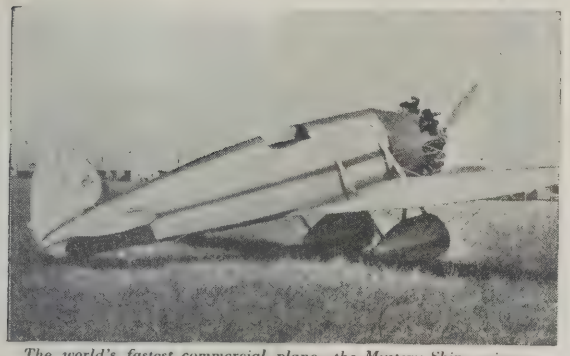

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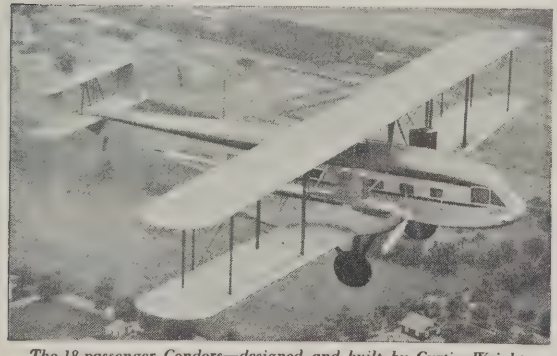

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D.H. Gipsy MOTH

April 15, 1930

SOUTHERN AVIATION

Vol. 1, No. 8

Published monthly in the interests of aviation and all aeronautical activities in the southern states

T. W. McALLISTER, *Editorial Director.*
B. H. VINCENT, NAT M. JOHNSON AND S. R. McGILLIS, *Editorial Staff*

Contents

A New Field for Aircraft Salesmen 7
Tulsa's Airport Leads the World 8
Views of Tulsa Airport Service Facilities 11
Every Town Should Contribute Air Marking 13
Features of the Packard Diesel Engine 15
Airways Radio Communication 18
A Practical Outline of Weather Studies 21
$750,000 Airport at Grand Prairie, Texas 24
Views of New Curtiss-Wright Airport 25
Aerial Maps for Flood Control 27
News of the Southern Airports and Airways 28
New Airport Developments 34
Aeronautical Personalities 35
General News of the Aviation Industry 39
New Airplanes and Accessories 48

THERE is an amazing amount of interest in gliders at the present time, as evidenced by the organization of numerous glider clubs in all parts of the country. Demonstration flights in some cases draw thousands of visitors. The members of these glider organizations are not only prospects for gliders but in many cases will be prospects later for power planes. The opportunity thus presents itself to salesmen in the airplane industry to do some valuable promotional work—to assist in forming glider clubs and to cultivate the members of these organizations.

* * *

THE fact that in the South is located the world's busiest airport may be news to some people—but it is not news in Tulsa, Oklahoma, where the citizens are all air-minded and where any visitor inquiring about transportation schedules is usually informed first, how he may get to the point he wants to reach, by airplane. In this issue will be found an article by the manager of Tulsa's municipal airport, giving detils of management, operations, equipment and service charges.

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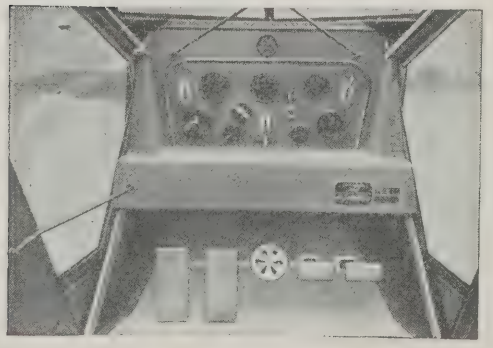

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SOUTHERN AVIATION

Volume 1 April 15, 1930 Number 8

A New Field *for* Aircraft Salesmen *in* Growth *of* Glider Clubs

By Roy E. Butler

AN AMAZING amount of interest has developed in gliders ("sailplane" is the latest name which has been applied to them) and glider clubs are springing up all over the South. This development creates a new and very attractive field for aircraft salesmen; for among the members of the newly formed glider clubs are to be found active prospects not only for gliders themselves but also for power planes.

An indication of the widespread interest in this fascinating new sport, it may be pertinent to give some details of the initial flight of the Atlanta Glider Club, one of the two active glider organizations formed recently in the Gate City. The field used is located several miles from Atlanta. It could have been located easily enough on the day of the initial flight—March 9—by the steady stream of automobiles proceeding in that direction for several miles before the first flight was scheduled to take place. A crowd of some three thousand enthusiastic people witnessed this event.

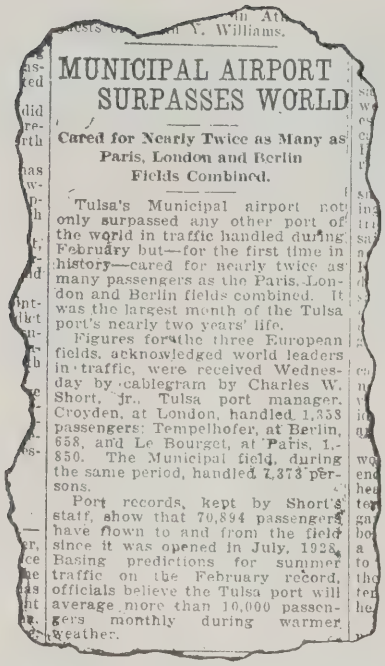
The initial flight at the Atlanta Glider Club

It happened that we were visiting Candler Field that day to extend greetings in behalf of SOUTHERN AVIATION to Joseph G. Duckworth, general manager of the new Atlanta branch of Curtiss-Wright Flying Service. On returning from a flight in his new Travel Air, with Wright J-6 motor, which had just arrived from Wichita, we noticed a huge crowd at what proved on further and closer investigation to be the brand-new glider field. The crowd seemed to be of proportions which would awaken jealousy in a circus magnate. Immediately on landing, we struck off for the new field where we made the acquaintance of Professor T. E. Moodie, aviation instructor at Georgia Tech and organizer of the new glider club, and Professor Strout, through whose courtesy the accompanying photographs were taken.

Some thirty or more members of the newly-formed club were there. It gave us a thrill to watch them take their first flights—but imagine how much greater the thrill was for them, some of whom had never even been up in the air before. The boys had a good work-out under the skillful guidance of Professor Moodie. Every thirty minutes or so the professor himself would stage an exhibition flight. One of the best flights at the field that day was made by a member of the club who had never been up in either a plane or a glider and whose entire knowledge of flying was acquired in just ten minutes of instruction.

It is interesting to note the "modus operandi" of putting a glider in flight. The glider rests on a small wooden runway, some fifteen or twenty feet long, pointing down hill from any point near the crest of the hill, the starting point. The rubber rope or shock cord is attached to the nose of the glider in V shape, each lead line about fifty feet long, with four or five men on the down hill end. The glider is held in position on the wooden runway by two or more of the ground crew holding the tail while the rubber rope

(*Continued on page* 12)



MUNICIPAL AIRPORT SURPASSES WORLD

Cared for Nearly Twice as Many as Paris, London and Berlin Fields Combined.

Tulsa's Municipal airport not only surpassed any other port of the world in traffic handled during February but—for the first time in history—cared for nearly twice as many passengers as the Paris, London and Berlin fields combined. It was the largest month of the Tulsa port's nearly two years' life.

Figures for the three European fields, acknowledged world leaders in traffic, were received Wednesday by cablegram by Charles W. Short, jr., Tulsa port manager. Croyden, at London, handled 1,353 passengers; Tempelhofer, at Berlin, 658, and Le Bourget, at Paris, 1,850. The Municipal field, during the same period, handled 7,373 persons.

Port records, kept by Short's staff, show that 70,894 passengers have flown to and from the field since it was opened in July, 1928. Basing predictions for summer traffic on the February record, officials believe the Tulsa port will average more than 10,000 passengers monthly during warmer weather.

That the Tulsa Municipal Airport in February handled more passengers than the three largest airports of Europe combined, is indicated in this article from a Tulsa newspaper.

Tulsa's Airport

By C. W. Short, Jr.

Manager, Tulsa Municipal Airport

THAT aviation is not only a rapidly expanding branch of the transportation industry, but that it already is becoming a stable and profitable branch, is indicated in striking fashion by figures now available on operations at the Tulsa Municipal Airport. The figures are especially significant because of the fact that this airport is less than two years old. It was opened in July 1928.

The statistics as to traffic handled are decidedly impressive. In the first eighteen months after the inception of the airport, 69,000 aerial pessengers were handled from the Tulsa Municipal Airport without accident. During the last six months or more, this airport has lead the entire United States in transient and transport traffic, and during the months of January and February surpassed by a wide margin, the great ports of London, Paris and Berlin.

A total of 7,373 passengers were handled from the Tulsa Municipal Airport in the month of February. This report came at the time of year when there usually is a general lull in flying activities, and in addition it was the shortest month of the year. Yet, the figures for this period showed that more passengers used the airport than in any other month in its history. Recently we have been clearing an average of 2000 passengers a week.

Records such as these caused Will Rogers to comment in his daily column, on the tremendous passenger traffic passing through the Tulsa port and to laud it as the leading airport of all those he had visited. In view of these records we feel that we are conservative in predicting an average of more than 10,000 passengers monthly during the later spring and summer months.

Of course, one of the principal reasons for the increase in business during the last two or three months has been the reduction in passenger tariffs to rates which approximate the combined railway and pullman fare. These figures indicate what may be expected at other airports as the network of transport lines expands and as the public becomes acquainted with these low transportation charges. Perhaps of even more significance to those who

Left, the comfortably furnished living room at the Tulsa airport hotel. All the conveniences of a modern hostelry are offered the air passenger here. Right, a view of the modern restaurant at the Tulsa Municipal airport.

Leads *the* World

The Record of Traffic Handled and Profits of Operation

Aerial view of the Tulsa Municipal Airport, showing the arrangement of hangars and the servicing facilities. Shown in the insert above is C. W. Short, Jr., airport manager

are interested in airport operation or management, is the profit-and-loss statement of the Tulsa Municipal Airport for nine months of last year, from April 1, 1929, to January 1, 1930. During this period the total income was $96,000, the major portion from the sale of gasoline and the balance from ground leases, rentals, concessions and storage. $71,501.89 represented the cost of sales, expenses, salaries, general operating costs, etc., leaving a margin of $24,498.11. After deduction of $15,000 for interest on investment and $3,449.17 for depreciation, there still remained a clear net profit of $6,048.94 for the nine months period. These figures may be taken as authoritative, since they are obtained from the auditor's report.

These figures are very significant because of the well-known fact that thus far practically all municipal airports have been operated at a loss. We feel that this very gratifying financial showing of the Tulsa Municipal Airport is due not only to the large amount of traffic handled here, but also the economy and conservatism practiced by the management.

The entire organization of the Tulsa Municipal Airport consists of nine men. This may be rather difficult to believe, in view of the traffic handled; but due to the extensive training of the service men and their very thorough knowledge of their respective duties, the airport is able to operate with the following force:

One hangar chief and one assistant are responsible for all planes stored in the municipal hangar.

One field man is constantly working the turf and, with the aid of tractors, graders and other implements, keeps the landing area and surroundings in first-class condition. One service man and one assistant take care of arriving planes, service them and look after the fueling system. (The hangar man is a mechanic and does all the necessary minor repairs; while difficult repairs are attended to at the airline hangars, depending on type of motor, plane, etc.) The writer is general manager of the airport and has supervised its development and operation from the start. William Barnwell is assistant manager, handling the recording of traffic and other routine duties. O. W. Duncan, airport accountant, handles the accounting and financial details. This completes the personnel with the exception of the night watchman.

The Schedule of Service Charges

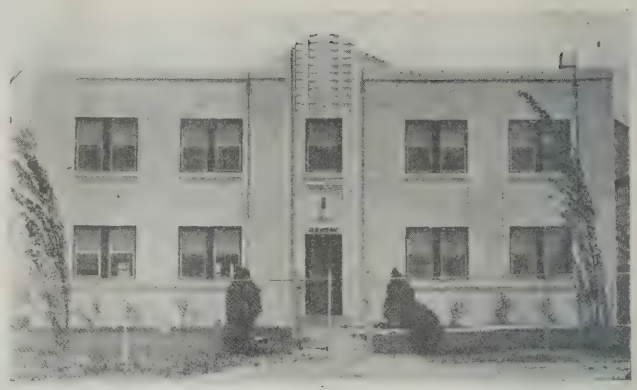
Naturally, in view of the figures we have given regarding income and net profit, there will be some interest in the matter of service charges at the Tulsa Municipal Airport.

A considerable portion of the airport income is from rental of hangar space. This space is figured on an area basis, one foot of wing span equalling twenty square feet of floor space. The rental charges are then figured as follows: Planes 800 square feet, $1.50 daily or $25.00 monthly; planes 800 to 1100 square feet, $2.00 daily or $30.00 monthly; planes 1100 to 1300 square feet, $2.50 daily or $45.00 monthly; planes over 1300 square feet, $3.00 daily or $55.00 monthly.

Airlines operating from the airport pay an operation fee figured on a basis of so much per plane. However, this basis has not proven satisfactory and will be changed at an early date, so I would not recommend it to any other airport operator.

Mechanical labor is charged at the rate of $2.00 an hour, with the time of the helper being charged at $1.50 an hour.

Southern Air Transport ticket office at Tulsa Airport



"Ye Slippe Inn," the pilots' hotel

For those who wish to stay on the field, a small but modern hotel is owned and managed by the airport. Clean and comfortable sleeping rooms are provided, as well as a lounge for the tired traveler in which he may relax after a long journey. This service is especially appreciated by pilots, who find available here, comfortable rooms at $1.00 a night or $20.00 a month.

A complete and up-to-date restaurant is maintained, at which one may order from a varied menu or may procure light lunches to take on board the plane. At the suggestion of travelers, a barber shop was installed and this has proven to be not only a convenient feature but a profitable one as well.

Nearly every branch of aviation activity is located on or near the airport. Since the summer of 1928, when work was first started on the field, four giant hangars have been constructed of steel and stucco, with a combined capacity of over 100 planes. Three of these hangars are 160 by 200 feet and the other is 100 by 120 feet. The approximate cost of two hangars was $130,000 each, the third was approximately $80,000 and the fourth cost about $50,000. At the present time arrangements are being made for the construction of a passenger terminal to cost $135,000.

Service shops of the air transport lines, employing 74 skilled and licensed machinists and mechanics, are located in these hangars, together with equipment to repair and rebuild any known type of aircraft. Any plane in need of repair or overhaul is sent to one of the hangars, depending upon the type of motor or plane, as each shop is equipped to handle a different type.

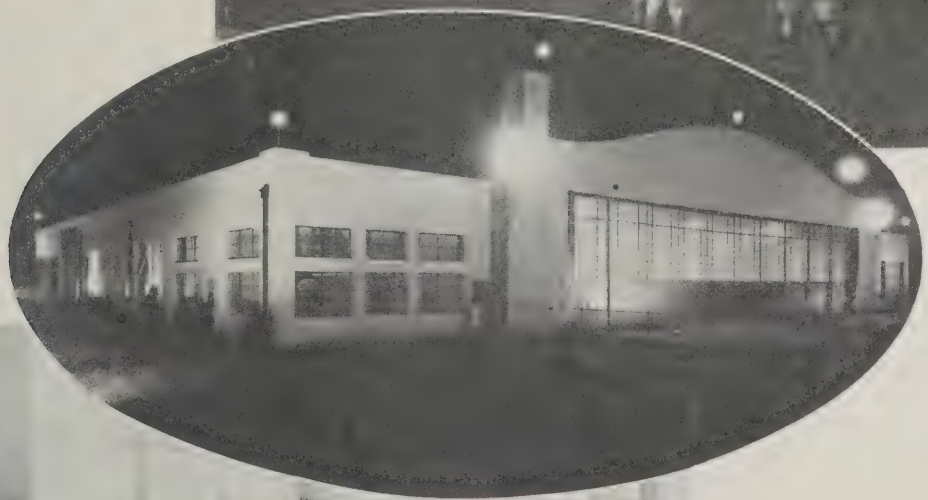
There are on the field, ten electric gasoline pumps and storage tanks, with a capacity of 26,000 gallons of gasoline. These are distributed along the south boundary of the field and at the hangars, thereby eliminating any great amount of taxi-ing to obtain fuel.

Another convenience in the servicing of planes is a concrete taxi-strip connecting all the hangars and the fueling pits, so that no plane need leave the concrete until ready for the take-off. All planes are housed in heated hangars and are dusted and wiped down daily, a service which is rendered by the air-

Complete Service Facilities are Available at the Tulsa Municipal Airport for All Planes

At left is a glimpse of the American Airlines hangar, Southern Air Transport division.

At the right is a view of the propeller department in the Spartan service shops at the Tulsa municipal airport. Below is a night view of the Southwest Air Fast Express hangar at the Tulsa airport.



Left: Overhauling motors in the shops of the Spartan School of Aeronautics. The school maintains a force of mechanics, and the shops are equipped for doing any type of overhaul job.

Right: The sales and service hangar of the Spartan Aircraft Corporation adjacent to the Tulsa airport.

This photograph shows Universal planes at the Tulsa municipal airport, ready to take off on their daily trips to Dallas, Kansas City and Cleveland

port and for which no charge is made.

The Southwest Air Fast Express, better known as the Safe Way Air Lines, occupies one of the large steel and stucco hangars on the airport which measures 160 by 200 feet. This building contains shops and offices of the line and is equipped with every modern device for operation and maintenance of the fleet of tri-motors which fly 3340 miles daily. Five Safe Way tri-motored planes leave the Tulsa port each noon and return the following morning, connecting Tulsa with St. Louis, Dallas, Kansas City, Springfield, Okahoma City, Fort Worth, Wichita Falls, Sweetwater and Abilene. This line maintains ten Fords and four Lockheeds and employs 68 mechanics, 30 pilots and co-pilots and 42 men in the traffic and auditing department.

The Universal and Southern Air Transport divisions of the American Airways operate from a hangar similar to the one owned by Safe Way and fly six tri-motored Fokkers daily in and out of the airport, connecting Tulsa with Cleveland, Chicago, Kansas City, St. Louis, Oklahoma City, Fort Worth, Dallas and Wichita. This transport system maintains at the Tulsa airport a mechanical crew of 20 men and an office force of 12 people.

The National Air Transport operates six Falcons daily in and out of the airport, carrying mail between Dallas, Tulsa and Chicago, by way of Kansas City. This transport line uses the municipal hangar for its storage and operation and maintains a crew of three men and a field manager.

The Spartan Aircraft Company, which manufactures planes in a factory adjacent to the airport, owns a hangar of the same size and type as that occupied by the Safe Way lines. The Spartan School of Aeronautics bases its operations on the municipal airport but trains from an auxiliary field five miles distant. The Spartan School at present has an enrollment of one hundred and fifty students.

Tulsa is located on the most popular and, without a doubt, the finest all-year airway for coast-to-coast travel. A survey of fog conditions shows that the route through St. Louis and Tulsa has less fog than any other known coast-to-coast airway, and that geographically and climatically this section is as near ideal for flying as can be found in the country.

With all these natural advantages in her favor, Tulsa proceeded to construct and develop an airport that would be a credit to any city. The prospects for the future are most encouraging, and the Tulsa Municipal Airport is prepared to go ahead, hand in hand with aeronautical progress.

A New Field for Aircraft Salesmen

(*Continued from page* 7)

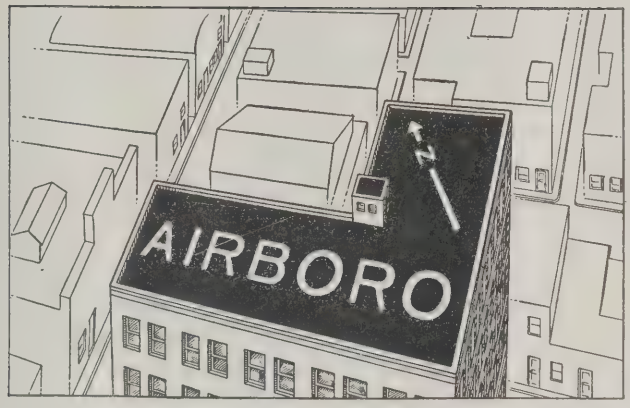
is stretched on either side about twenty feet.

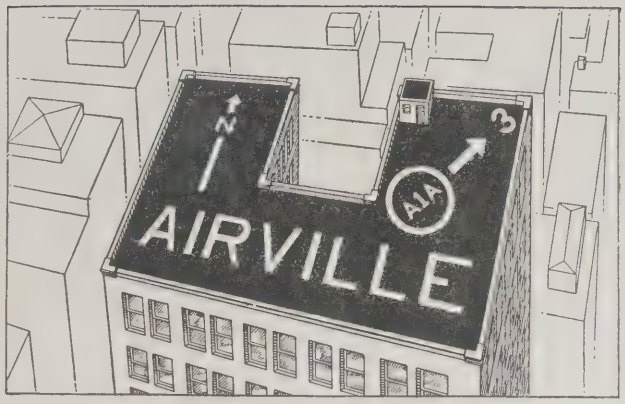
At a given signal from the pilot the tail is released, the rope men start at top speed down the hill—and up she goes! The rubber rope automatically releases itself when the glider goes into flight. Then the student-flyer gets his first feel of the joy stick. It's like driving a new car for the first time. The student is immediately sold on the business of flying. After he has soared up a few feet off the ground, he will not be satisfied with anything but a motored plane.

It's time for some aircraft salesmen to awaken to the possibilities offered them in the many new glider clubs which are being organized over the South. The sale of a glider is well worth while. The Cessna stock model used by the Atlanta Glider Club sells for $425. And gliders are being sold in quantities. The Detroit Aircraft Company is reported to have sold sixty of the primary type gliders in one week.

Ready to take off on the initial flight

It would be well worth while for any salesman to visit these newly-formed glider clubs and get acquainted with the members. The greater number of them have licensed airplane pilots as instructors. It may be taken for granted that the average glider student will never be satisfied with the glider only; and that every club and every student is a good prospect not only for a second glider but for a powered ship.





These illustrations show the forms of air marking recommended by the Department of Commerce

Every Town Should Contribute *Standardized Air Marking*

By John F. Gill

Transport Pilot, Davis Airlines

ONE of the most important and cheapest material contributions a city or town can make in line with the progress of aviation today is standardized air making. That this is true will be agreed upon not only by the pilots who have had to check their location by reading the name on the end of a railroad station in a low dive, but by the passengers who see town after town slip by underneath them with never an idea of which is which.

Standardized air marking, however, does not mean the simple act of painting the name of a town on some shed in colors that happened to be left from some other paint job. It means the marking in a standard system to conform with Department of Commerce recommendations, recommendations issued after considerable study and experimenting by the Army Air Corps and others. It means that, in addition to the name of the town or city, there shall be an arrow indicating the true North and another arrow pointing the direction and distance to the airport, if there be one, and showing the airport rating.

Some progress has been made in the South in this respect but the work is far from complete.

When the subject of air marking a town comes up before the chamber of commerce or some civic club, the sponsors too often use as their sole argument the fact that it will advertise the town, just as a firm name on a letterhead advertises the firm, but there is a vastly more important reason for air marking.

Diving at a railroad station to find out the name of a town is, in addition to whatever else it may be, exremely dangerous, a fact that is obvious when one remembers that straight low flying over a town is dangerous.

A giant army plane, flying cross country recently, got off its course and the pilot attempted to orient himself when he picked up a small town in Alabama. No air marking was visible from a safe altitude and the pilot circled the ship low over the town. While just above the roofs his motor developed trouble, began missing, and burst into flames.

With an altitude of less than 300 feet he could not climb and told his three passengers to jump as he headed the ship for open space. They jumped but one of them made his leap as the stricken ship passed over a hill. His parachute did not have time to open and he was killed.

That is just one illustration to show that air marking is not simply a convenience for airmen. It is an important safety factor. Let one imagine a train piloted by an engineer who has never been over the route before, and carrying passengers from a distant state, speeding over a stretch of track with towns and stations unmarked and without a map or time table. Of course the engineer might stop and inquire where he was, but an aviator cannot do that. Neither can his passengers look at their time tables and watch and determine where they are.

Metropolitan cities are not so numerous but that a pilot can usually check his flying time and tell when he has reached one. But if he gets off his course and misses the city, then the small town that he reaches at the time he should have picked up the city, must orient him, guide him on his way by letting him know where he is and telling him the true north direction. Perhaps it has become too late for him to reach his destination before dark or his fuel supply has run low or his motor is not performing smoothly. Then he wants to land and the town should tell him which direction its field lies and how far.

Many small towns, and they are the most important in air marking, have displayed a willingness

to cooperate in this respect, but at the same time have shown an ignorance of what is proper. One oil firm is marking its storage tanks, which may be located anywhere along the railroads in the outskirts of the town, and too often the town considers that sufficient. Or some individual paints the town's name on a low, small roof in dim colors, and the town accepts that as sufficient.

One town along the route used by army planes and a great many others in flights through the South has its name in properly colored letters on the circular roof of a water tower. Underneath the name, following the curve of the circular roof and describing a half circle, is an arrow supposed to be pointing true North. Yet the citizens of this particular town are keenly air minded, are developing a landing field, and have stated that they will do everything necessary if some one will just tell them what to do.

When a pilot seeks the name of a town on a roof, he usually banks in a circle over the business section and it is there that the air marking should be done. If it is on some warehouse or shed out in the edge of town it is difficult to find and more often than not will be entirely missed.

I have flown over a town several minutes without seeing its name and then have landed to be asked by some enthusiastic citizen: "Did you see the name of our town on the garage roof?" They refer to some building out beyond the fertilizer factory in the scattered section of town.

Where the Name Should Be Placed

The name should be in the heart of the downtown business section and then it cannot be missed. There should be another marker on the railroad station or on an adjoining building. Railroad stations can always be found from the air but their weather-beaten signs on the ends of the building are harder to read than Pilgrim's Progress. The same applies to the city, although the importance there is not as great as in the small town.

Just as billboards have been lined along the highways with outdoor advertising, glaring colored signs are destined to present themselves to aviators of the future from nearly every roof. Space will become valuable for such advertising, and is already being utilized.

When it approaches the point that has already been attained along the highways, aviators are going to have to know that the town air marker is in a certain specified place in each town and seek it there. To pick it out from a random location would be like going through a book in search of some particular quotation.

Air markers are easiest read when light colors are used for the lettering and characters, with a darker color for the background, particularly when the markings are to be illuminated for night operations. The army finds that chrome yellow characters on a dead black background give the best results and this color combination is recommended for standard use in all air marking.

The letters of the town or city should be from 10 to 30 feet high, depending on the amount of available space, but in no instance should they be less than six feet, which makes them virtually illegible from a safe altitude. Rather than reduce the size, it would be better to use abbreviations. Gothic capital lettering, width of the strokes being one seventh that of the height, is best.

The shaft of the meridian marker, or the arrow pointing true North, should be broken to allow for a letter "N" six to twelve feet in height, the overall length of the marker being from six to seven times this letter height.

An arrow pointing out of a circle at a figure that shows the mileage to the airport should indicate the direction to the airport. Within the circle should be the Department of Commerce rating designation. This circle should be large enough for a three-character rating designation with each of the characters six to twelve feet high, the shaft twelve to twenty four feet long, and the figure or figures denoting mileage eight to fifteen feet high.

It has been found that gravel and pitch roofs are unsatisfactory for painting, whereas the name may be placed directly on metal, shingle, concrete, slate, or tile. For the gravel and pitch roofs it is best to use painted galvanized iron or other rust-resisting metals for the lettering.

Fortunately the problem of snow covering air markings in the South is not so great, but the very time when they are snow covered is often the time they are most needed. This may be overcome by using raised markings at a height that will enable the wind to keep them swept clean of soot, dust or snow.

Lighting of air markings, and they must be lighted to serve their full purpose, is accomplished in the same manner as lighting large advertising signs, by reflected or projected flood lights, by transmitted light in which incandescent lamps are mounted under translucent glass strips of suitable color arranged to form the letters or symbols, and by direct light in which markings are outlined by exposed incandescent lamps or by neon tubes.

The need for lighted markings has not yet made itself so important in the South, but will become vital within a short time.

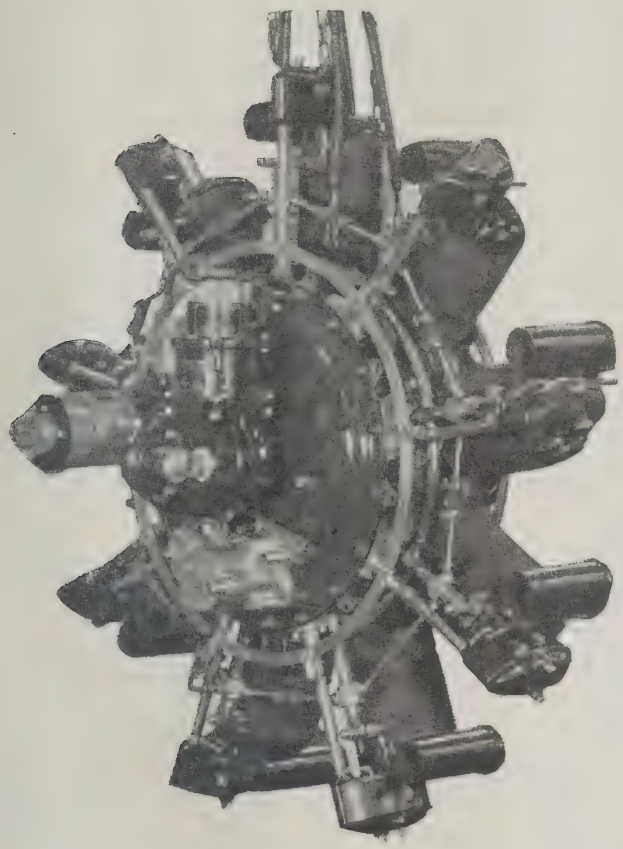
The Guggenheim Foundation for the Promotion of Aviation has devoted a considerable part of its work to air marking and has offered to cooperate with southern states along this line. In South Carolina Governor Richardson requested all railroad lines in the Palmetto State to air mark their stations, and called on the towns and cities to make other provisions where this was not done.

Air marking in Georgia and Alabama was given impetus by the air tours held in both these states, the latter refusing to consider any town in its itinerary that was not properly air marked. The Department of Commerce booklet on air marking was forwarded to every town and the importance of this feature to aviation pointed out. One large

(*Continued on page* 26)

Features of the Packard Diesel Engine

Detailed Description of Engine Based on Designer's Report Made Public on April 5



THE Packard Diesel aircraft engine, designated as model DR-980, was granted approved type certificate number 43, by the Department of Commerce on March 3, after two and one-half years of intensive testwork at the Packard factory, under the supervision of Captain L. M. Woolson.

The Diesel is of the radial air-cooled type, having nine cylinders with a bore of 4 13-16 inches and a stroke of 6 inches, with a displacement of approximately 980 cubic inches. It is rated at 225 horsepower at 1900 r. p. m., and weighs dry 510 pounds, or 2.26 pounds per rated horsepower.

The following description is a summary of the report by Captain Woolson before the Society of Automotive Engineers during the Detroit Aircraft Show, April 5:

The outside diameter of the engine is slightly over 45 inches and the engine is attached to the mounting ring with eight 3-8 inch bolts, arranged on a bolt circle of 22 inches diameter. In so far as its general characteristics are concerned with relation to size, weight and general arrangement, the engine does not differ radically from conventional gasoline aircraft engines of a similar type. This, however, holds true only in so far as general external appearance is concerned, since the engine incorporates many constructional features never before employed in aircraft engines.

The real point of departure between the two systems of operation is the ignition system involved. In the gasoline an electric spark is depended upon to fire a combustible mixture of gasoline vapor and air, which mixture ratio must be maintained within fairly narrow limits in order to be fired by this method. In the Diesel engine pure air is introduced into the cylinders instead of a mixture of air and fuel, as in the gasoline engine, and this air is compressed into a much smaller space than is possible using a mixture of gasoline and air which would spontaneously and prematurely detonate if compressed to this degree. The temperature of the air in the cylinder at the end of the compression stroke of a Diesel engine operating with a compression ratio of about 16 to 1 is approximately 1000 degrees Fahrenheit, which is far above the spontaneous ignition temperature of the fuel used. When the fuel is injected in a highly atomized condition at some time previous to the piston reaching the end of its stroke, the fuel burns as it comes in contact with the highly heated air and the greatly increased pressures resulting from the tremendous increase in temperature brought about by this combustion, acting on the piston, drive the engine as in the case of the gasoline engine.

The air supply of a Diesel engine is compressed and its temperature arrangement raised to such a high degree that it permits the use of liquid fuels which correspond more nearly to the crude petroleum oil as it issues from the wells. This fact accounts for the much lower cost of the Diesel fuel as compared with the highly refined gasoline needed for aircraft engines.

Diesel engines used in stationary and marine service make from 100 to 300 revolutions per minute. In the Packard Diesel aircraft engine, this speed has been increased to over 2000 r. p. m., and this has been accomplished by an engine design that produces a turbulence never before approached in this type of engine. This method and the highly efficient and quick-acting fuel pumps that had to be developed to go with it, are the means that produce the accelerated commingling of the fuel and air which bring about this greatly increased engine speed.

In the description of the Packard Diesel engine three basic principles of design are to be considered. First, the engine must be sufficiently strong to withstand maximum cylinder pressures two to three times

as great as those obtaining ordinarily in a gasoline aircraft engine; second, a high degree of turbulence must be maintained in the cylinder to permit of all the fuel combining with all the oxygen present in the cylinder during the extremely short time allotted for combustion at high engine speeds; third, the fuel pumps and nozzles must be designed to operate over a much wider range of speed than heretofore found practicable in Diesel engines.

Features Which Reduce Weight

The weight of the Packard Diesel has been brought down to approximately that of the gasoline engine in common use today. Heretofore, Diesel engines have weighed around 25 pounds per horsepower, whereas the Packard Diesel weighs only 2.26 pounds per horsepower. Weight economies in the Packard Diesel have been secured by the elimination of carburetors and magnetos and by an intense simplification of design.

The crankcase, which is of one piece, weighs only 34 pounds. In the Packard Diesel, two circular hoops of alloy steel encircle the cylinder flanges in contact with the crankcase at the front and rear of the engine and these hoops are contracted by means of sturdy turnbuckles so that an initial stress is set up in these hoops which exceeds by a wide margin the operating stress resulting from the cylinder explosions. Under this system the crankcase is subjected to an initial compression which it is well adapted to resist.

Arrangement whereby the crankshaft and propeller are protected from excessively high stresses has been made. The crankshaft counterweights and the propeller are both flexibly mounted on the crankshaft so that when the peak pressures occur a cushion is interposed between the crankshaft and those parts which have the maximum inertia or flywheel effect. In this manner the stresses in the crankshaft are greatly reduced and it is possible to use a crankshaft of a size not substantially different than that employed in a corresponding gasoline engine. This is another feature that contributes considerably to the weight reduction as compared with previous models, all of which have been characterized by extremely heavy crankshafts.

Special features in cylinder design have resulted in a very light construction, each cylinder weighing only 11 3-4 pounds. It was recognized to begin with that the cooling problem of a Diesel cylinder was considerably simpler than that of a corresponding gasoline engine cylinder, since the increased thermal efficiency of the Diesel is reflected in the far lower heat losses to the cylinder walls than is the case with the gasoline engine cylinder. This justifies the simple form of closed end cylinder design in which the cylinder head proper is formed integral with the cylinder barrel, a construction which is not considered satisfactory for gasoline engines.

Captain Woolson, who designed the Packard Diesel engine

Another novel feature is the use of a single valve for both inlet and exhaust purposes. This is another factor which has contributed in a marked degree to weight reduction. The single valve arrangement has been favored, not only on account of the general gain in simplicity and weight saving, but also on account of reliability, since the valve operates at a much lower temperature than the conventional exhaust valve, due to the cooling effect of the incoming air passing over the same valve.

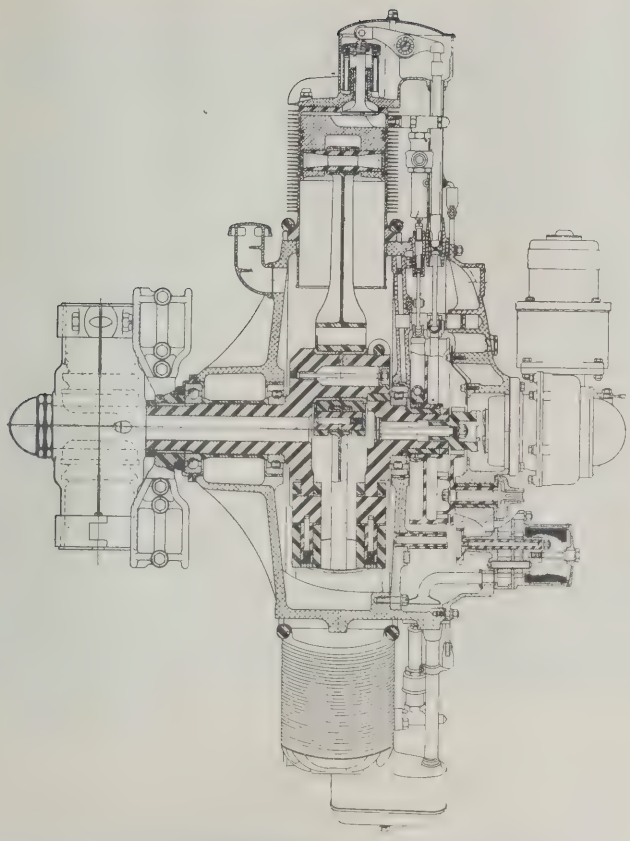
One of the main distinctions between a Diesel engine and a gasoline engine is the manner of insuring a homogeneous mixture of fuel and air. In either case a mixture must be created if perfect combustion is to be secured in the extremely short space of time available, amounting to about four-thousandths of a second at an engine speed of 1800 r. p. m.

This mixing in a gasoline engine is accomplished in the carburetor and intake manifold. In the Diesel engine no fuel is admitted into the cylinder until practically the instant that combustion is desired, so that special means have to be provided to insure complete and efficient combustion. It has been accomplished in the Packard engine by giving the incoming air an extremely rapid whirling motion so that at high speed the circulation of the air in the cylinder is at a rate which permits of one revolution of the mass of air around the circumference of the cylinder bore during the time available for combustion. The inlet port shaped as a flattened venturi brings about a high velocity.

A self-contained fuel pump and nozzle unit provide for a finely atomized injection of the fuel, accurately controlled and timed. A great deal of care has been given to the design of moving parts of the fuel injection system to reduce their inertia to the minimum, since at high speed extremely high accelerations in the order of 15,000 feet per second are encountered.

One of the major problems in connection with the development of the Diesel aircraft engine has been the matter of starting. Of course, an aircraft engine is required to start easily in all conceivable operating temperatures, such as in the case of an engine which has been standing for several days with a temperature of ten below zero. A light-weight starting system had to be developed. The conventional type of inertia starter used so successfully with gasoline aircraft engines seemed to offer the best solution. During the period of development it was also conclusively proved that no Diesel engine could ever be started with reasonable expenditure of cranking power at below zero temperatures without the aid of some external source of heat. This has been taken care of in the form of an incandescent heating element, or glow plug, which furnishes the required heat. These glow plugs are used only at very low temperatures.

The lubrication system of the Packard Diesel does not differ radically from conventional aircraft engine



Vertical cross-section of Packard Diesel

practice. A special effort was made to simplify the system as much as possible and in the interest of reliability there are no oil pipes inside the engine nor are there any drilled passages in the crankcase itself.

Operation of the Engine

Starting with the intake stroke it is found that the single valve has been open during the exhaust stroke and remains open as the piston travels down from top dead center, drawing fresh air through the intake port which is exposed to the slipstream of the propeller. Shortly after the bottom dead center the valve closes and the air in the cylinder is compressed on the up-stroke of the piston. A compression ratio of about 16:1 being used, the air is compressed to a pressure of about 500 pounds per square inch and its temperature is thereby raised to 1000 degrees Fahrenheit. About 45 degrees before top dead center the fuel pump tappet starts to rise, forcing the pump plunger upward. As soon as the pump plunger has passed the inlet port of the fuel pump the fuel which is trapped in the fuel pump cylinder is compressed and forced out through the nozzle in a finely atomized spray which immediately ignites on coming in contact with the superheated air in the cylinder. The amount of fuel injected depends upon the length of the stroke of the fuel pump plunger above the "cut-off" position, that is, the point at which the inlet port to the fuel pump is covered by the plunger.

The fuel injection starts about 45 degrees before top dead center and continues until the piston is almost at top dead center, thus allowing the pressure to rise in the cylinder at a comparatively slow rate until a maximum pressure of about 1200 pounds per square inch at wide-open throttle is reached. When the piston passes top dead center the gasses expand in the cylinder until the single valve opens approximately 45 degreees before the piston reaches bottom dead center. The products of combustion are then forced out through the valve and through the exhaust manifold which is connected to the rear opening of the combined inlet and exhaust port on the cylinder head.

The operation of the engine is exactly the same regardless of how much fuel is being introduced into the cylinders, except that for very slow idling the fresh air ports are almost closed by the shutters.

The engine is started by means of the familiar type inertia starter used commonly with all types of gasoline aircraft engines. The only difference between starting the Diesel aircraft engine and the ordinary gasoline engine is that the throttle on the Diesel is held wide open while the engine is being cranked and no priming or choking is required. The engine starts immediately on its regular supply of fuel oil, no special fuel or preparatory heating being needed.

In stopping the engine it is merely necessary to close the throttle completely against a spring stop. The engine can be stopped instantly no matter how hot it may be, since there is never any danger of the engine kicking backwards as with the gasoline engine stopped in this fashion. It is therefore never necessary to shut the fuel off when stopping nor, of course, are there any switches to operate.

The Packard Diesel has been run with many different kinds of fuel and apparently, so far as the engine itself is concerned, the fuel specifications can be extremely broad. The fuel generally used and found highly satisfactory has been domestic furnace oil as used in oil heating plants for residences and costing about nine cents per gallon.

Some of the advantages claimed for the Packard Diesel engine are as follows: Its superiority over gasoline engine may be attributed to the lack of electrical ignition which eliminates the fire hazard, and a separate fuel injection means is applied to each cylinder in contrast to the use of a single carburetor feeding several cylinders in a gasoline engine. Each cylinder in the Diesel engine operates independently of the others and the failure of one fuel pump would not affect the others.

Thousands of hours of ground and flight testing have conclusively proved that it is impossible to ignite accidentally the fuel oil used in the Packard engine.

An estimate of the fuel consumption reduction is placed at 20 per cent and, due to the specific gravity of the fuel used, a saving of over 30 per cent by volume is effected. Due to the much lower grade of fuel used a considerable saving is made.

Exclusively low air temperatures or abnormally high air temperatures have no effect on the Diesel as on the gasoline engine.

The fact that there is no electrical ignition equipment used in the operation of the engine removes one of the most troublesome obstacles to extensive radio use in airplanes.

These photographs show the radio range station which has just been completed at Candler Field, Atlanta, similar to several other stations now being completed in the Southeast

Airways Radio Communication

By Lieut. George Barr

Who is now handling airways radio installations in the Southeast for the United States Department of Commerce

"FORSOOTH Goodman Fythe, do ye hear what that mad Ben Franklin be doing?"

"Now 'tis he that be disturbing the Gods of the storm. He is I hear in the market place, of a mind to fly a kite into the clouds when the bolts of fire are alive, and when the thunder of the clouds is sounding. What think ye of the likes of that?"

"No good can come o'it. 'Tis a sign of witchcraft, and better it be that Father Franklin feel the chills of the ducking stool, or the long hours of the stocks, or even the rough edge of a scalping knife drawn across his brow and the blunt of a tomahawk on his thick skull. That would teach him to leave the upper Gods be. He sayeth those bolts of fire up yonder in the storm are charges of electricity traveling through the air. To think anything could travel through the air!"

"Yes, and he it is that said 'After losses, men grow wiser'. Well, methinks he will lose this time, all right."

But Benjamin Franklin did not lose. He paid scant heed to the jibes and scoffings of the superstitious and incredulous populace of his day. Instead he astounded the scientific world with the result of his experiment with the kite. He proved that those bolts of fire were identical with the faint spark which men were able to produce by rubbing plates of glass together. The ancient Greeks had named it "Electricity," a name derived from their word for amber, which they called "elektron," because they found that amber when rubbed hard would have a strange power of attracting other substances. The early men made no use of this mysterious power, and it remained for the men of a later day to see the great possibilities which might be developed therefrom. In 1837 Morse was issued a patent for an electric telegraph. The world quickly took full advantage of this new and rapid means of communication. Then somewhat later Bell showed the world a new instrument utilizing electricity. Voice was transmitted, and the world again was not long in making use of this new idea of transmitting thought from place to place by the apparently simple means of the use of wire and two small instruments.

Wireless was the next field of endeavor, and in 1891, patent No. 465971 was issued to the electrical wizard, Thomas A. Edison, for a means of communicating with a moving train by use of induction, and without the use of wires. (This patent was purchased in 1903 by the Marconi Wireless Telegraph Company.)

The year 1896 saw the first Marconi British patent for the transmission of messages by wireless, when a distance of 1 3-4 miles was covered successfully. Next, Marconi went to four miles, then ten miles, then 34 miles. In 1897, signals were received from a ship at sea, 18 miles out, and in 1901 the letter "s" was received by Marconi from a distance of 1,800 miles.

Then the year 1914 saw the successful demonstra-

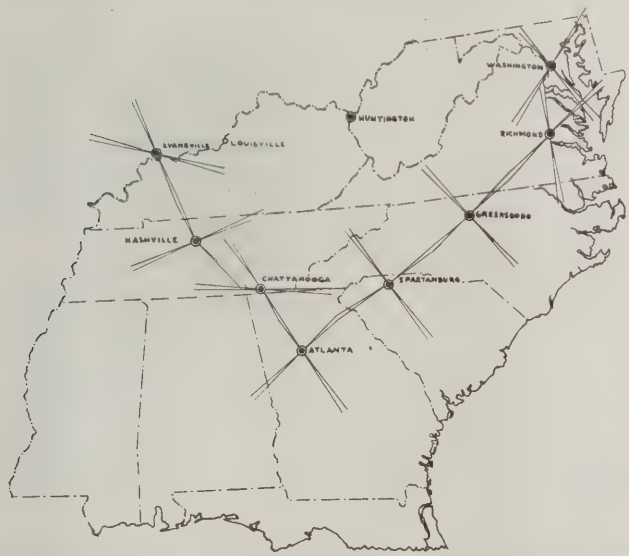
tion of voice by wireless, and in ten years these experiments brought such astounding results that today radio is a common word in our language, which we all think of as meaning the transmission of voice over the air, without wires.

It was only natural that aviation should utilize this means of communication. An airplane is a free agent. There is no connection with the ground while in flight, no more so than there is a physical connection between your home receiver and your favorite broadcasting station.

The trans-Atlantic flight of the NC4 in 1919, which made use of radio, focused the attention of the world upon the application of radio for aviation purposes and its value to aerial navigation. It only remained for the next few years to see the great strides that have been taken to link radio and aviation.

The actual concrete and specific result so far as commercial aviation is concerned, is the Airways Radio Station, with its organization and purpose to aid in air navigation.

The Air Commerce Act of May 20, 1926 authorizes the establishment of air navigation facilities



This map shows the location of the radio range stations which are now being completed in the southeastern states

which it defines so far as radio is concerned, as radio directional finding facility, radio or other electrical communication facility. To provide the facility as noted, Airways Radio Stations are being constructed along the various airways.

Just here might be mentioned a question often asked, "Who can use these Airways Radio Stations?" Quoting further from the Air Commerce Act of 1926, "Air navigation facilities owned or operated by the United States may be made available for public use." In other words, these facilities are available to those who wish to make use of them.

Just what, then, is an Airways Radio Station, and what is the organization behind it?

In a nutshell the Airways Radio Station is for point-to-point communication along the airways, for talking to the pilot while in flight along the airways, and for giving him a directional signal to guide his ship by, while in flight along the airways.

Weather is the biggest problem in flying, and to get the best of Old Man Weather, one must know all about what he is going to do. Knowing his movements ahead of time, one can act accordingly. It is here that the Airways Radio Station steps in. Weather information is collected along the civil airways by various means, namely by teletype, telephone, or telegraph, and in turn is broadcast to pilots in flight. Forecasts are also broadcast as well as information as to available clear landing fields in case of heavy weather which would necessitate the pilot making a landing rather than proceeding to his destination.

This is given by voice, and thereby much simplified the first ideas which made it necessary for a pilot to know his dots and dashes. Ask any war pilot to tell you the hardest row of stumps he travelled in his flying training, and the answer will be "Radio." Hours upon hours of buzzer practice from reveille to taps, and yet many a good man met his Waterloo, so far as a flying career was concerned, at the hands of the wireless instructor. So much for voice to the pilot.

Suppose your pilot takes off from Spartanburg with a full load of mail and a few passengers. He knows that there is thick weather ahead, for he found that out before he took off. Yet he does take off and knows what to expect. Then there comes to him a voice out of the air telling him that Candler Field, Atlanta, is completely fogged in with no ceiling. "Royston," continues the voice, "clear, with both runways in good shape. Jefferson is also clear with no fog, but field soft, and Lawrenceville no ceiling."

"That's that," says your pilot, and lands at Royston, entrains his mail and passengers,

Keeping the Pilot on His Course

Then there's the beacon, or "directional finding facility." Let us suppose, for sake of example, that the pilot received the information by voice that it was foggy at Candler Field, Atlanta, but there was a ceiling of about 300 feet, with the same at Lawrenceville. He would then conclude the fog was about the same height above the ground all along that end of the route, and decide to come on in. Then suppose at some point the ceiling went clear to the ground, and he became completely fogged in.

But the voice tells him that there is still 300 feet visibility at Atlanta, so there is now no reason for not flying on in. However, fog is very deceptive to the aviator. His instruments may tell him whether he is flying on an even keel, but they will not tell him when he is drifting off his course. So here is where we will introduce the beacon, or directive facility.

Our pilot hears a certain signal, a prolonged dash, such as you might hear at noon any day preceding the regular broadcast of time signals, these dashes being heard at the rate of 22 per minute. Should he drift off his course, say to the left, instead of the one long dash he will hear a dot dash, which in wireless code is an "A". If he drifts to the right of his course,

he will hear a dash dot, or "N", or vice versa. So long as he keeps straight on his course he will hear the long dash.

These signals are coming from the beacon station, or Radio Range as it is termed. This type of signal is called aural, or that which is heard. Another type of signal which is visual is being developed experimentally and is to be tried out on some airway. By the use of the visual type signal, the pilot observes an instrument on the face of which are two vibrating reeds. So long as he is on his course, both reeds will vibrate with equal amplitudes, but should he deviate, say to the left, the reed on the left will increase in amplitude and the one on the right decrease in amplitude, or vice versa.

The beacon stations are located as near as practicable to the airport they are to serve, for the pilot coming in through the thick fog will continue to fly on the signal beam until he reaches the beacon station.

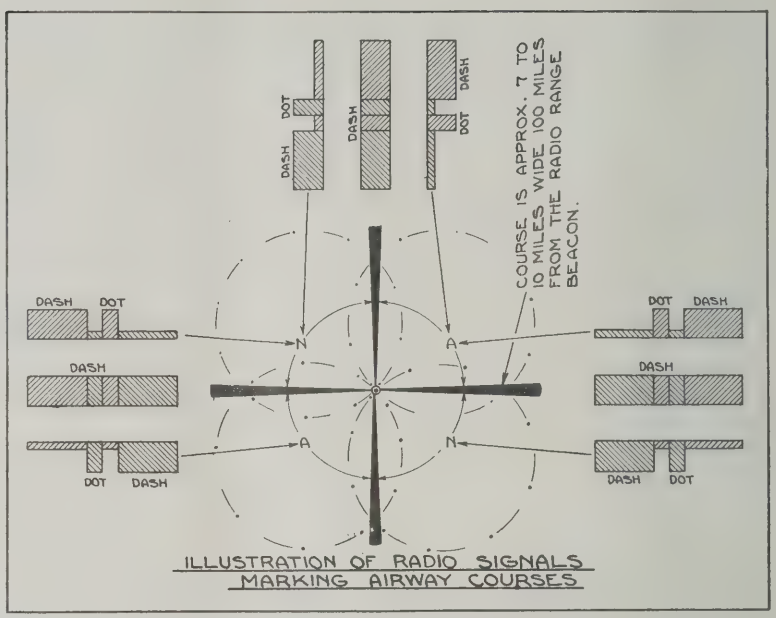


ILLUSTRATION OF RADIO SIGNALS MARKING AIRWAY COURSES

The phone or voice, and beacon, will operate on the same wave length, and every 15 minutes the beacon signals will stop and voice will identify the station, give weather information, etc.

A 2-k.w. intermediate frequency transmitter is used for broadcasting voice to the pilot, and a 400-watt high frequency transmitter is used for point-to-point communication. The aural type equipment consists of a 2 k.ww. interlocking equi-signal transmitter with goniometer and automatic keying device.

A glance at the airways map will show that airways radio stations are in operation at Washington, Richmond, Greensboro, and Atlanta, on the eastern and southern seaboard. The Atlanta-Chicago airways will be similarly equipped in due course.

Operators are on duty at all times in the airway radio stations, which means that three men in each station are required to work eight-hour shifts. These men have passed the requirements of Civil Service, and are holders of Federal radio licenses.

To quote Chief Engineer F. C. Hingsburg, of the Airways Division, Bureau of Lighthouses, Department of Commerce, under whose supervision these stations are located, built and operated: "The training of personnel for operators has been a huge task, as none of the radio operators has had a great deal of experience in broadcasting. In order to perfect the system, two airplanes of the Airways Division were equipped with radio receivers and have been flown extensively over the airways, listening in to broadcasting of weather information for the purpose of training personnel and shaking down the equipment to smooth and efficient operation. One of these airplanes is a cabin Fairchild 71 with a Wasp motor and the other an open cockpit Stearman biplane with a Wright J-5 motor. Three types of receivers have been used and each has given excellent service."

About 18 pounds is the weight of the airplane receiving equipment exclusive of antenna, for voice and beacon reception, and the Aeronautics Trade Directory as published by the Department of Commerce (Aeronautics Bulletin No. 3, U. S. Government Printing Office) gives names of makers of this apparatus.

So, Airways Radio is therefore just another accomplishment which man has performed with the tools of science, combining modern methods of organization and the inventive genius of the age in which we live. Working everlastingly toward a goal which emphasizes safety in aviation, the task is a happy one.

When we look back a comparatively few years and see Benjamin Franklin drawing lightning from the clouds in his search for knowledge, then this morning tune in our radio and hear Admiral Richard E. Byrd talk in a clear voice to friends in New York while at a point in New Zealand, 10,000 miles distant, we cannot help but think of that first message that was sent over telegraph wires, "What hath God wrought?"

Program of Airport Conference at Buffalo, New York

ONE of the most complete programs dealing with the study of airport problems ever contemplated was announced for the Second National Airports Conference to be held at Buffalo, N. Y., May 14 to 16. The three-day conference is expected to bring to Buffalo nearly 1,000 airport engineers, city officials and builders.

Members attending the conference will be placed on one of the eleven committees that will study problems to be met in the building and management of airports. Sub-Committees are already at work collecting data for use in preparing reports. These committees will meet the opening day of the conference and make reports to the general body the second day. The third day of the conference will be given over to a meeting addressed by various aviation experts, and an airport equipment demonstration at the Buffalo Municipal Airport.

A Practical Outline of Weather Studies

Lieutenant Geppert is an instructor in navigation and meteorology at the Universal Aviation Schools in St. Louis, and a member of the American Meteorological Society.

By Lieut. J. W. Geppert

THE eyes of the nation were fixed upon St. Louis, Missouri. Aviation was especially interested in the event which was to take place September 28, 1929. Nine entrants were to take off on that autumn afternoon, rain or shine, for the first leg of the new Gordon Bennett Trophy for balloons. It was an International affair. To most of the public it was merely a race to see who could stay up the longest and travel the farthest.

It so happened that the writer had the good fortune of witnessing the preparations made by one of the teams representing the United States. The chief preparation was that of KNOWING weather conditions of all parts of the United States for seven days prior to the races until the gas bag finally landed. The way this was done was most thorough. There was only one hitch, namely, not enough weather information. To see these men plot surface conditions on a map, then upper air currents for different altitudes, and then plots of barometric changes for the last 12 hours, study the whole, deduct, and finally forecast; all this night after night, even up to the last moment before taking off, was an experience that was invaluable.

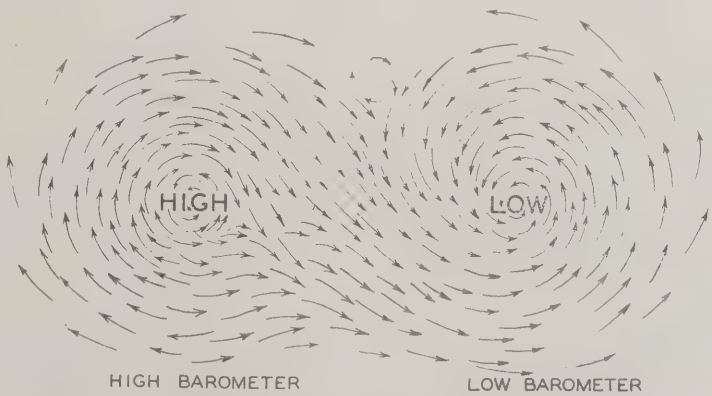
It was this work of studying the weather that made the results show up so well. They knew just what to expect and where to expect it. It then became a matter of picking out the proper altitude so as to take advantage of prevailing weather conditions. The main object, of course, being to get into such air currents as would take them away from the point of departure. What they needed most was upper air data and it was this information that came in most incomplete.

The balloonist equipped with a thorough knowledge of upper air currents has the race half won. The pilot who knows what weather he will meet can determine the upper course to pursue in order to deliver his passengers and cargo safely. There is no excuse today for a pilot to take a chance with weather against him. The Weather Bureau furnishes information along any route the ship may take so that the man at the stick knows just about what he will encounter. Should a line squall be seen ahead and its width be rather short, it can be passed successfully and quickly, provided one knows the air movements in a storm.

In a storm, the wind blows counter-clockwise inward. Should the plane be heading westward, the pilot can take advantage of a tail wind by flying about the storm to the northward. In the case of flying eastward, then he can fly to the south in order to take advantage of the wind. Allow leeway to the right at all times because these winds are blowing in toward the center of the storm.

In flying north with a storm ahead, it is best to fly about it to its rear as the storm travels from 20 to 40 miles per hour in an easterly direction across the United States. The reasons for this are many. Should a forced landing be necessary, it is far from being pleasant to land in the path of a storm. The wind velocities may be great and cause damage. Hail sometimes accompanies storms in the summer which adds to the danger. In one case a plane came through a hail storm with 1300 holes punched through its fabric. It crashed in landing.

Unless the storm is seen to be a small one of local dimensions, there is no excuse for the pilot to "take a chance" in trying to get through, especially when the craft being flown car-



Characteristic wind circulation about centers of high and low barometric pressure areas

ries passengers. There are innumerable examples of where chances were taken resulting in discomfort to passengers and in some instances their death. Commercial aviation can not afford at this time of trying to sell the public on more flying, to weather the storm of criticism which results from taking chances with the weather. It retards its growth too greatly.

The question of lighting quite frequently comes up for discussion. It is the consensus of opinion among most scientists that lightning is not attracted by aircraft. There is, however, the danger of being in the path of the flash when flying through a storm. There have been several instances of just such cases. The result is always the same—a complete washout. The flash of lightning is a result of a discharge from the positively charged air to the negatively charged earth. A plane in its flight may take on an electrical charge and should it come near an area of opposite charge, there would merely be a brushing discharge probably not even noticed by the pilot. The small space taken up by the plane would not attract lightning from its course as a conductor of its discharge. It might be added that it is dangerous for a plane to be close to a flash of lightning because the outward movement of the atmosphere, as it is torn apart, is terrific and it might suffer serious consequences.

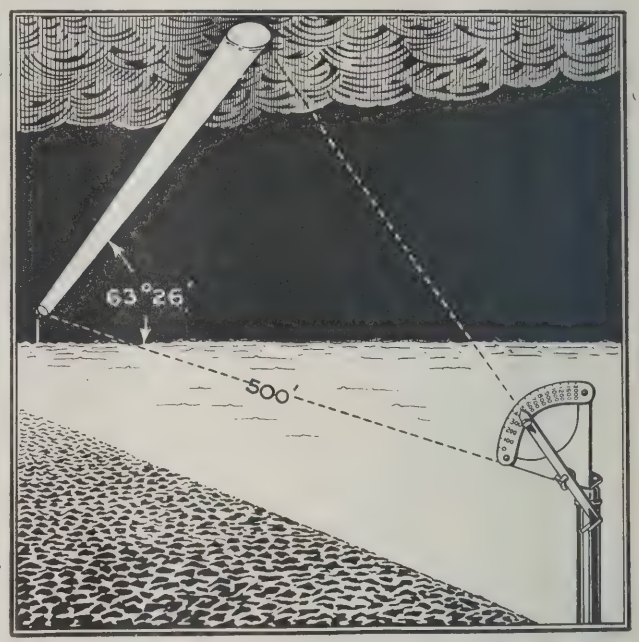
Services of the Weather Bureau

With the means of communication and network of observation stations we have today, weather seldom slips one over on us. The Weather Bureau keeps tab on the situation at least twice a day from reports which come in from over two hundred localities spread over the United States and outlying districts. Aviation has and is forcing the government to give it constant information at practically all hours of the day.

These observers observe the sky, and the clouds are classified; barometric readings are taken and reduced to sea level so that all stations may show pressures reduced to the same plane; the direction and velocity of the wind are noted; the rain or snowfall is measured; the current and the extremes in temperature since the last previous readings or observation are taken from several thermometers; the moisture content or relative humidity of the air is calculated; and all other phenomena such as storms, fog, etc., are carefully noted.

The observer then condenses all this mass of information into code and telegraphs the message to Washington where the data is assembled into proper form. Within fifteen minutes all this work is completed and within two hours printed maps are on the way to the subscriber. Aviation has forced the weather bureau to publish maps showing information of particular interest to pilots. These maps are somewhat larger and give wind velocities on their face.

In due time wind velocities and direction will be posted for different altitudes so that the pilot may choose the correct altitude at which to fly advantageously. It may be of interest to know that wind directions and velocities change with altitude. Over



How ceiling height is measured. The powerful searchlight in the left background throws a beam skyward at a fixed angle, the height of which from the point where it enters the cloud, to the ground is read on the quadrant at the lower right. Illustration from Crouse-Hinds Co.

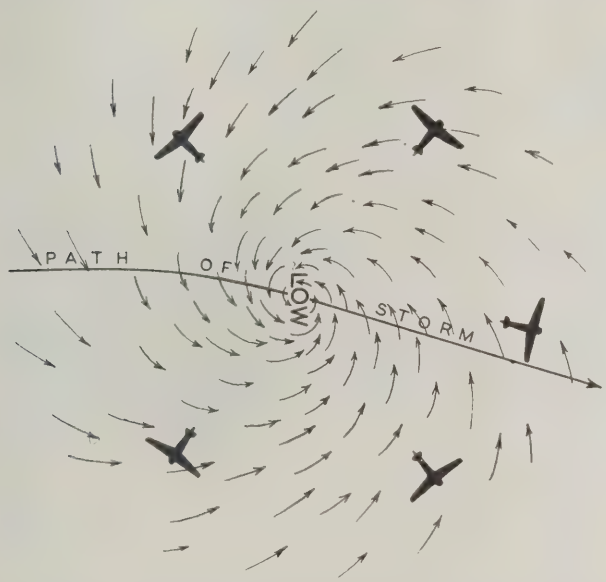
a certain city in Missouri the wind at the surface was from the west at 10 miles per hour. At an altitude of 2000 feet it was from the north at 8 miles per hour. At 10,000 feet it was from the south at 25 miles per hour.

The locations of the observation stations are indicated by small circles on the weather map. The arrow shows the direction in which the wind is blowing at the surface and if the circle is totally black this indicates that the sky is completely overcast with clouds. If partially shaded, partly cloudy, and if clear, the sky is clear. If the letter "R" is in the circle, it is raining. "S" stands for snow, "M" for report missing, "F" for fog, etc., as the case may be. The areas in which there has been at least .01 of an inch precipitation are shaded. Continuous black lines join points of equal barometric pressure, while dotted lines join points of equal temperature. The pressure lines are called Isobars and are usually spaced .1 inch pressure apart, while the temperature lines are called Isotherms and are spaced 100 Fahrenheit apart.

The process from observations to map making is conducted along such specific rules that the finished map furnishes a complete picture of the actual conditions of the weather. To the experienced weather man this picture is as clear and understandable as though he had actually beheld the whole weather situation with his own eyes. From this map the experienced forecaster proceeds to forecast the weather for different localities. The forecast is by no means guess work. It is based upon conclusions derived from observations of thousands of weather maps of past years. They are deductions from the map in hand of the probable movements and developments for the time specified. Human judgment,

however, must necessarily be subject to some error. In St. Louis the forecast is approximately 95% accurate. This is a good record. Nature at times will play pranks in which case the weather man is subject to ridicule from the public.

To the layman this weather map means nothing. The clouds in the sky warn him of an impending storm, wind, rain or snow and it is this feature which the map is unable to picture for us. The writer knows of some sections of this country where weather is forecast from clouds entirely. Some forms of clouds do mean bad weather. Others do not, yet, when followed by still others within a few hours are signs of impending storms. The cloud should first be watched carefully to see whether or not it is disintegrating. If it is, the storm area in all probability is breaking up. In the case of Band Cirrus, or well



Sketch showing heading relative to winds when very near severe storm center

defined cat's claws, in some places these are definite signs of bad weather. This cirrus cloud is the highest and thinest of all clouds and is made up of floating ice particles. Preceding a storm it is always in long streaks and at times brushes out like a "Mare's Tail," after which it is named.

The next cloud in sequence is the Cirro Stratus which is light in color and spread out like a tangled web. When Ci.Stra. follows Cirrus one can predict bad weather within 12 hours and be accurate 90% of the time. The third cirro cloud is the Cirro Cumulus. There are two distinct types, one the Hard or Mackerel Sky, which all of us know and the other the Soft. The former is the bad weather cloud and the latter the fair weather Cirro Cumulus. Some authorities have associated both types with bad weather in the summer time.

The Alto-Stratus is a thick sheet of gray of bluish color with usually a brilliant patch near the sun or moon, and although not always a rain producing cloud, usually precedes a general rain by a few hours. With the Alto Cumulus clouds, which are rather large globular masses, white or grayish in color and partially shaded, their edges closely packed together, we have several different types. The Castellatus, meaning turreted, denote rapidly ascending air currents and hence must be associated with thunder storms. The Glomeratus are rounded balls arranged in patches and are as characteristic of thunderstorms as the Castellatus. The Maculosus are small cloudlets with considerable space between the rows. They do not form during the hot part of the day but rather toward sunset. They will resist strong vertical currents and hence are a good indication that storms will not occur for some time.

The Cumulus Cloud needs no introduction. It is that thick dome-shaped cloud with a horizontal base, the cloud of beauty which floats about at 2,000 to 3,000 feet. All aviators have had much fun flying through them. Alone in the sky, they are harmless, yet at times they develop into the Cumulo-Nimbus which is the Thunder Cloud. Here we find masses of clouds rising to the shape of mountains constantly boiling. Below are dark ragged spurts shooting off in all directions thrown about by the air currents. From the base there usually fall showers, rain or snow and occasionally hail or soft hail.

Nimbus are rain clouds—a thick layer of dark clouds without shape, and with ragged edges, from which constant rain or snow falls.

The last type of clouds and yet it is not a cloud, is the fog. It is the chief worry of pilots when they know its presence is near. Few pilots have made landings in fogs and after the experience never wish to try it again. Fogs may be formed in two ways—by radiation or by mixture of two different masses of air having decidedly different temperatures. The first is of local character and is formed during the summer when the air is quiet, especially about marshes or low lying cool surfaces. The ground or water is of lower temperature than the air above it. By radiation this atmosphere is cooled and hence if at all humid must give up moisture which it does in the form of fog. These fogs are shallow and dissipate hurriedly once the sun attacks them.

The second type is the one aviation is most concerned about. It is generally caused by a warm atmosphere drifting over a cooler surface. A good example of this class is that of the New Foundland fogs. Here the warm air current from the Gulf Stream floats over the surface of the cold Labrador current. It can be seen at once that these fogs will generate along coastal areas much more than inland. These fogs are most frequent along the north portion of the Atlantic and Pacific coasts; i. e., the New England States and San Francisco. As an example of the frequency of fogs characteristic of certain localities, at Point Reyes Light, near San Francisco, dense fogs occur on an averge of 137 dys in the year. Along the Lake region, from 10 to 20 days per year.

At present there has been no economical and practical method suggested for the dissipation of a fog. The sprinkling with sand or spray, evaporation by heating, and drainage through tunnels are all well meant suggestions, but out of line from an economic

(*Continued on page* 26)

Recently completed hangar of Curtiss-Wright Flying Service at Grand Prairie, Texas

$750,000 Airport Opened at Grand Prairie, Texas

ONE of the finest landing fields in the South is that of the recently completed Curtiss-Wright Flying Service airport at Grand Prairie, Texas, half way between Love Field, Dallas, and Meacham Field, Fort Worth.

The field, naturally drained but smooth as pavement, is 2,700 feet wide and a mile long, the length corresponding to the prevailing southerly wind. Bermuda grass, with roots already in the ground, will carpet the entire field, prevent erosion and reduce softening in wet weather to a minimum.

The Grand Prairie plant is one of 42 bases established in all sections of the country by the Curtiss-Wright Flying Service. The handsome hangar, with 30-ship capacity, is devoted to Curtiss-Wright purposes, but the field is free to the public.

Formal opening of the airport was held in mid-April, with a large flight of army aircraft participating in the ceremony. The Curtiss-Wright Exhibition Corporation had on the field for the occasion the old Curtiss "pusher" of 1908, the Curtiss-Tanager, the "mystery ship," the 18-passenger Condor, powered with two 600-horsepower Curtiss Conqueror motors, and the famous war ships, the Curtiss Hawk and the Falcon.

The Curtiss-Wright Flying Service operates one of its flying schools at Grand Prairie, offers a 24-hour charter service and sells aircraft. Besides its own line of planes, the base will serve as the agency for Travel Air, Keystone and Boeing planes. A Fort Worth branch office has been opened and placed in charge of R. O. Dulaney.

W. A. (Tex) Bohannon, believed to be one of the first flying students ever taken by Charles S. (Casey) Jones, now president of the Curtiss-Wright Flying Service, is manager of the Grand Prairie airport. Sam D. Irwin, who has had experience in eastern airports, is assistant manager. L. H. Luckey is operation manager. Don Diegel, chief flying instructor, is, as is required of all flying teachers in the organization, a graduate of the Curtiss instructors' school at Grosse Ile, Mich. E. G. Gregory, the ground school instructor, is a licensed mechanic, rigger and parachute packer. He does parachute jumping "on the side." E. G. Hotchkiss is the storekeeper.

When the port opened, the flying service had three mechanics and four service pilots, but it was expected that both departments would be increased in size at once.

The Grand Prairie ground and flying schools were opened with 35 and 10 students, respectively. The ground school is a complete aircraft laboratory and has a wind tunnel with flying model connected to standard controls, where students may go through all the motions of flying and get many of the thrills, while seated in a chair.

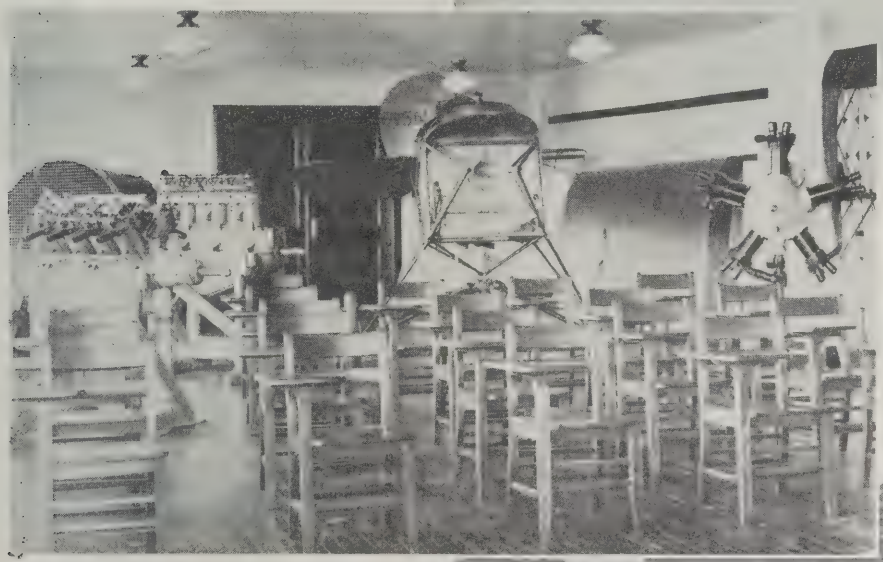
The ground school is located overhead on the north side of the hangar. Below is the machine shop, completely equipped for engine overhaul. Facilities for ship repair also have been provided. On the ground floor on the south side of the hangar are located general offices, pilots' lounge and locker room and a handsome, comfortably furnished waiting room. Overhead is an observation deck, the length of the building.

The building over-all is 160 by 120 feet, the hangar proper occupying 120 by 120. Hangar doors have 20-foot head room and are full opening. They face east and west.

The Grand Prairie airport represents an investment as it stands of $750,000.

Views at New Three-Quarter-Million Dollar Airport of Curtiss-Wright at Grand Prairie, Texas

Modern new hangar erected by the Curtiss-Wright Flying Service at Grand Prairie, Texas, which is midway between Fort Worth and Dallas. The Curtiss-Wright investment at this airport totals $750,000.



Left: A class room in the new Curtiss-Wright hangar at Grand Prairie equipped for motor instruction. The varied aerial services offered by the company at its other bases in the United States will be available at this field.

Right: A corner of one of the machine shops showing lathes, drills, and welding apparatus. A portion of the accessories department, adjoining the shop, is shown at the rear.

Left: Waiting room adjoining ticket office at the Grand Prairie hangar. This is the latest Curtiss-Wright base to be completed in the South and brings the total number of bases in the southern states to nine.

Practical Outline of Weather Studies

(*Continued from page* 23)

point of view. The problem of guiding aircraft through fog for a landing still confronts us.

The writer feels that fog never will be entirely conquered and that it always will remain a foe to be beaten. Probably the best bet is the Neon Light which in test actually penetrated 2500 feet of fog. This light of course serves best at night. It seems that if enough such lights were posted about a field the pilot could make a fairly good blind landing after locating the field by the lights from above the fog. However, the depths of fogs vary, and since it is a hazardous undertaking to attempt investigating fogs, we have not at present enough information along this line to form a definite idea of what may be expected in conquering them Directional radio may help considerably. A two-way communication between plane and ground has overcome fog. This feat was performed at an eastern airport whereby the ground informed the pilot by radio as to his position over the field by the noise of his motor. By dropping slowly as directed, the craft was landed intact.

The question of variation of temperature with altitude is one quite frequently discussed among pilots. It is true that with increase of altitude we have a decrease of temperature when all things are normal. Let us for a moment consider the atmosphere. From the earth's surface to a point upward where the temperature ceases to drop, and remains stable or shows an inclination to increase again, is the strata of atmosphere known as Troposphere. It is here that all weather takes place such as clouds, rain, snow, etc. The atmosphere above is called Stratosphere. Here the weather is stable alwavs. no clouds or rain.

Many factors determine the rate of decrease of temperature with increase of altitude and that can be understood when one considers the turbulent condition of the atmosphere about storm areas, near high barometric pressure areas and low, etc. However, a general rule or scale may be recorded as follows: 3° F. drop for every 1000 feet for flying altitudes. Temperature ceases to drop when the top of the Troposphere is reached, but the depth of the troposphere may vary. In the event of inversions the rule will not work accurately at all. The Great Inversion is that point between the Stratosphere and the Troposphere, called the Tropopause. Above it the temperature is consant or increases.

Inversions occur at various altitudes in the atmosphere. When the atmosphere is disturbed by various velocities having different directions, it quite frequently happens that a marked difference in temperature may be noted. As a matter of fact, many conflicting results have been obtained through experiments in which recording thermometers have been attached to balloons. Much information concerning upper air is still required before we can definitely come to conclusions of real value.

It is fitting that a suggestion be made to all transport pilots at this point. Study the subject. Study temperature, air pressure, atmosphere moisture, clouds and wind. Study the map with its Isobars and Isotherms, and, with the knowledge of the routes of cyclones and anti-cyclones, check up on the prediction you have made from day to day. In this way you will become acquainted with the movements and how weather results. You will never become really proficient, unless a special study is made of the subject, yet for all practical purposes you will have a knowledge which the other man has not. The salesman who knows his product can sell it. The salesman who does not know his product has a hard time. The pilot who knows weather is girded with a weapon which will help him to success. After all it is merely the application of common sense once the basic principles are understood.

Standardized Air Marking

(*Continued from page* 14)

railroad in these two states was asked by the National Aeronautic Association to paint its stations with the name of the town and its bridges with the name of the rivers, but the railroad declined. In the request, it was pointed out that railroads have a force of painters that are continually repainting all along the line and could do the work at very little cost.

Since the air tours in the two states, however, aviators are complimentary in their remarks about the air-marking, declaring it was well ahead of some sections of the country, many of which have entirely ignored this work.

Another southern state that has awakened to the necessity and advantage of air marking is Florida, particularly the thickly populated East Coast, part of which is one continued town after another. They all proudly display their names to those who fly above. In another southern state a state convention of county commissioners adopted a resolution to air mark every county seat, preferably the court house. This is an idea that might be followed in other states that have associations of mayors or county commissioners. Other groups that have pledged themselves to promote air marking include the American Legion, the Order of Elks, and many of the civic clubs.

Some of them seem inclined to drop the work with adoption of resolutions, but if a sufficient number of them can be interested, together they will accomplish the task. And when the work is finally completed, those interested should bear in mind that time and the elements wear away the markings and that a repainting is advisable once a year.

Outside of airport facilities, I consider air marking of towns the most important aid to aerial navigation that the municipalities can contribute. The government and operators will establish the weather bureaus, radio beacons and stations and lighted airways, but air marking, like the municipal airport, is the duty of the individual towns and cities and it is by this work that the pilots and passengers will know and remember them.

Planes and personnel engaged in mapping the Red River district

Aerial Maps *for* Flood Control

By M. V. Saunders

FOR the past few months an interesting aerial mapping experiment has been going on two miles up in the air, above Louisiana and Arkansas. Southwestern Aerial Surveys, Inc., out of Austin, Texas, working for the Mississippi Flood Control Commission out of the office of Major John H. C. Lee, United States District Engineer at Vicksburg, Mississippi, have been busy mapping the intricacies of Red River, an important tributary to the Mississippi taking its course through small portions of Oklahoma and Arkansas and cutting diagonally across the state of Louisiana.

In the legislation ensuing after the Mississippi flood of 1927, it will be recalled that among the tributaries mentioned for study was Red River, on which Shreveport, La., is the principal city. The government appropriated five million dollars to the study and survey of these tributaries. This aerial survey of Red River has been from the Oklahoma line south to its entry into the Mississippi, using Shreveport as the base of operations.

Under the management of Robert Coltharp and a crew of three men, an area 500 miles along the river has been photographed. The crew has been using the Texaco Airport at Shreveport of Wings, Inc. The ground work for the mapping was done by a corp of government engineers working under Major Lee.

This survey will give the government an "accurate detailed map of the territory for the purpose of investigating possibilities of flood control navigation, hydro-electrical power and irrigation." This method of mapping the territory saves a large part of the cost of ground mapping and when completed will be one of the most accurate and detailed maps available of any section. Around 5,000 negatives of the territory have been made. A knowledge of the topography of the country is gained from this type of mapping that is impossible to acquire in any other manner.

The equipment used in the aerial mapping work

The area that Mr. Coltharp and his assistants have been working out of Shreveport since December 12th stretches from the southeastern corner of Oklahoma to where Red River goes into the Mississippi and the backwater area of the Mississippi up to Winnsboro and St. Joseph, La. The men fly at an altitude of 12,150 feet, which is approximately two miles high.

News of the Southern AIRPORTS AND AIRWAYS

Many Improvements for Greenville Airport

GREENVILLE, South Carolina, having been designated as a regular stop on the New York to Atlanta air-mail route, work of improving the Greenville Municipal Airport and installing modern lighting equipment has been started. The improvements are expected to be completed within 90 days, after which mail-carrying planes of Eastern Air Transport, Inc., contractors, will make daily calls for delivering and colecting mail on both the northbound and southbound trips.

Funds for grading the airport and installing lighting equipment were appropriated jointly by the city and county governments of Greenville. The improvements are being carried out under the supervision of the Greenville Airport Commission, consisting of Milton G. Smith, chairman; V. M. Manning, R. W. Arrington, A. M. Rickman and Dr. R. E. Houston.

Success in having Greenville designated for direct air mail service is due to efforts exerted by the Greenville Chamber of Commerce and members of the Greenville Airport commission, over a period of more than three years. When the New York-Atlanta air mail route was established some two years ago Greenville made a strenuous effort to obtain a stop on the route, but was denied that privilege. Never letting up, but redoubling effort and consistently hammering away at the proposition, the joint committee saw its effort rewarded in a letter received March 8 from Assistant Postmaster W. Irving Glover announcing that Greenville would be made a regular air mail stop when the second plane was placed in service on the New York-Atlanta line, April 1.

Greenville's airport, embracing 156 acres, is unusually well situated. It is only three miles from the center of the city, has natural drainage, and is covered with a type of soil considered ideal for landing field purposes. Paved roads lead all the way from the city to the airport. Modern hangars are already a part of the equipment, with service stations, repair shops, and expert mechanical help available.

The ability of Greenville's airport to care for ships of large size and also in great number has been amply demonstrated. When the field was dedicated two years ago a total of 45 army, navy, marine corps, Department of Comerce and private planes were accommodated on the field at one time. Last fall all planes participating in the Ford Air Reliability Tour landed on the field without the slightest difficulty.

The Tulsa-Sweetwater line of the Southwest Air Fast Express has been extended to Midland, Texas. A second section has been opened between Tulsa and Wichita Falls, Texas.

An aerial view of the Greenville airport during the 1929 Ford Reliability Tour visit. Photo by W. B. Coxe

Statistics on Airplanes and Airports

FOR every 19,800 people in the United States today there is one licensed or identified airplane in operation, statistics compiled by the Washington Bureau of the Aeronautical Chamber of Commerce reveal.

The report shows that there were 9,740 licensed and identified planes throughout the country on January 15. Of this total 6,645 were licensed planes in actual operation. There also are 3,095 identified planes in the country in private use.

The report lists the planes according to states, showing the various types, together with the population per plane and registered automobiles per plane.

For every plane listed there are 2,977 automobiles, the report shows. In addition the report further shows that there are 1,463 recognized airports and 791 aircraft dealers throughout the country.

California leads the country in the number of licensed and identified aircraft, Missouri holds fifth place with 522 planes, Texas seventh with 441 planes, Kansas ninth place with 432 planes and Oklahoma tenth place with 332 planes.

California also leads the country in the number of airports witn 154. Texas has the second largest number of airports, 101. Oklahoma has 50 airports and Florida, 41.

California further leads the country in the number of aircraft distributors with a total of 66. This is almost double that of any other state.

Changes in New Orleans-to-Shreveport Schedules

Planes over the Wedell-Williams lines between New Orleans and Shreveport now leave New Orleans at 8:30 a. m., Alexandria at 10:45 a. m. and arrive at Shreveport at 12:00 noon.

On the south-bound trip passenger planes will leave Shreveport at 1:30 p. m. arriving at Alexandria at 2:45, Baton Rouge at 4:00 p. m. and New Orleans at 5:00 p. m.

Passenger fares mere reduced recently to approximate those in effect by railroads, over the Wedell-Williams lines.

Rapid Expansion of the E. A. T. Service

THE distinction of having the third largest scheduled daily mileage of any operating company in the United States came to Eastern Air Transport, Inc., on April 1, when new schedules on its air mail lines radiating from Atlanta became effective.

Overnight air mail to New York was inaugurated May 1, 1928, and the scheduled daily mileage, excluding Sunday, when no planes were operated, was 1,526 miles. A month before the second anniversary of this service, E. A. T. planes were flying 5,066 miles a day.

The Atlanta-New York Air Mail route is now the only one in this country and probably the only one in the world to have six flights scheduled on it every twenty-four hours—two more than the famous transcontinental.

Another evidence of Atlanta's remarkable developmet as an aviation center, and of the growth of E. A. T., is the fact that the Atlanta-New York line for the past several months has held fourth place among the nation's air mail lines in the matter of poundage carried. The only routes surpassing the Atlanta-New York poundage were Chicago-San Francisco, New York-Chicago and Salt Lake City-Los Angeles.

Under the additional schedules which became effective April 1, one or more mail planes of E. A. T. will be in flight every minute of the day and night. With the augmented service it will be possible to airmail a letter in Havana, Cuba, Monday afternon and have the letter in Atlanta at 11:15 p. m. the same night, and in New York at 9:30 a. m. Tuesday morning.

E. A. T. has just completed a $65,000 hangar and operations depot at Candler Field and operations headquarters and other departments have been centralized in Atlanta. Charlotte, N. C., was added as a stop on April 1.

E. A. T. planes will take-off from Candler Field daily for New York at 7:00 p. m. and 11:45 p. m., arriving at New York, respectively, at 5:00 a. m. and 9:30 a. m.

Planes will leave New York at 3:00 p. m. and 9:10 p. m., arriving at Atlanta, respectively, at 10:55 p m.. and 4:55 a. m. An additional "shuttle" service will be operated between Washington and New York.

Florida mail will leave Atlanta at 5:45 a. m. and arrive at St. Petersburg, 1:15 p. m. and Miami at 1:45 p. m. The northbound air mail will leave Miami at 5:30 p. m.; St. Petersburg, 5:15 p. m.; and arrive at Atlanta at 11:15 p. m.

At the upper right is shown the recently completed Eastern Air Transport hangar at Candler Field

Beeler Blevins Buys S. A. T. Hangar

The hangar belonging to Beeler Blevins at Candler Field, Atlanta, and some $125,000 worth of aircraft and accessories were destroyed by fire on the night of March 4. The structure of galvanized iron was completely destroyed, and the planes housed there burned beyond repair.

Blevins is one of the oldest operators at the field, and is well known over the South. Just prior to the fire he had become affiliated with John H. Candler in the Bleevins Aircraft Corporation.

The hangar was erected in 1927 at a cost of $12,000. The three planes belonging to Blevins that were destroped were a Waco "225," a Ryan Brougham, and an Eaglerock. Other planes belonging to various individuals stored in the hangar for the night brought the number up to 21. A considerable amount of shop machinery and extra motors was also destroyed.

The S. A. T. hangar has recently been purchased by Blevins and is being moved to the site of his old one. Instruction of his class of students in ground school will continue in his downtown class-room at 43½ Peachtree Street.

Many Agencies Handle Air Mail Letters

Five cents invested in an airmail stamp for a letter to fly in Texas alone will buy the services of two pilots, from eight to a dozen postoffice clerks and government field men, a commercial operating organization, and equipment valued into the hundreds of thousands, according to Victor F. Grima, general traffic manager of the Southern Air Transport.

Two pilots fly every letter mailed in Texas, even if it does not leave the state. The average letter is flown 1400 miles and carried by at least three different pilots, Grima said.

Branch of National Airways in Alabama

The National Airways, organized under the laws of Delaware, has qualified to do business in Alabama with headquarters at Decatur, where an airport is being built. William B. McAfee is Alabama agent for the concern.

February Biggest Month for E. A. T.

FEBRUARY, although the shortest month in the year and containing only 22 business days, was the biggest month in the history of Eastern Air Transport, Inc., operators for the Government of the New York-Atlanta-Miami air mail routes. The mail planes of the company carried a total of 47,293 pounds of air mail during the month, as compared with 38,830 pounds in January. This gives a daily average of 1,689 pounds for the 28 days of February.

There being an average of 40 letters to the pound, this means that a total of 1,891,720 flew to their destinations over the 1,572-mile airway serving the North and South, and a daily average of 67,561 letters. The previous largest month was that of August, 1929, when 43,836 pounds of airmail were flown along the Eastern Seaboard.

Atlanta-Chicago Airway Lighting Completed

OPENING of the Atlanta-Chattanooga section of the Atlanta-Chicago air mail route for night flying added another link to the growing chain of lighted airways installed by the Department of Commerce and made possible the inauguration of night flying over the entire Chicago-Atlanta route.

This was one of the most difficult lighting projects yet undertaken by the Department of Commerce due to the ruggedness of the terrain along the route and the inaccessibility of the tracts selected for emergency fields and beacon sites.

The Atlanta-Chicago air mail line has been in operation for more than a year but has not rendered maximum service due to the necessity of flying on day light schedules only.

The lighting of this airway, states a recent Department of Commerce bulletin, must be considered a major project both from the engineering standpoint and from the standpoint of its resultant effect on the air transport system of the United States.

The new schedule will call for departure from Chicago at 9:30 p. m. with arrival in Atlanta at 6:00 a. m. the next day. Stops will be made at Terre Haute, Evansville, Nashville and Chattanooga. At Atlanta direct connection will be made for Jacksonville, Miami, Tampa, Birmingham, Mobile and New Orleans. A ship leaving St. Louis at about 10:30 p. m. will connect with the southbound ships from Chicago at Evansville. Northbound airplanes will leave Atlanta at 10:00 p. m. after arrival of ships from Miami, reaching St. Louis at 5:00 a. m. and Chicago at 6:00 a. m., in time to connect with westbound transcontinental planes carrying mail to all Pacific coast points in aproximately 36 hours from Atlanta, the same as from New York.

Problems of the Survey

Survey of this airway was commenced in the early fall of 1928 and was carried on throughout the winter of 1928-29 and the spring of 1929 in the face of obstacles imposed by difficult terrain, impassable roads, adverse meather conditions and changing personnel. On an inspection trip over the southern half of this airway, one of the airways division engineers found it necessary to travel 112 miles to get by automobile from one beacon site to the next—a distance of but ten miles as the airplane flies. As landing fields could not be found on the straight line course, it was necessary to deviate and establish fields on a circular course. In other words, fields had to be built, not found.

About twenty-five miles from Atlanta, Kennesaw Mountain presented the first obstacle. Some fifty miles farther, in the vicinity of Calhoun, Ga., the airline course crossed a rugged 40-mile stretch of wooded mountain ridges, offering no chance for a successful forced landing, day or night. For this reason, the airway detours slightly to the north, to Dalton, and crosses these ridges through the gaps cut by Chickamauga Creek.

Intermediate fields along this section were located at Acworth, close by Kennesaw Mountain, Adairsville, located in the middle of the valley, and Dalton, at the edge of the mountains. In many cases it was necessary to remove from 10,000 to 20,000 yards of soil to put the fields in shape for landings and take-offs.

From Chattanooga to Nashville, the air-line course passes directly over Signal Mountain of Civil War fame and thence over a high, heavily wooded divide for two-thirds of the 115 miles of distance, which offers no landing places, roads, or other facilities for airway maintenance. Consequently, the airway bears westward, between Signal Mountain and Lookout Mountain, cutting across the bends of the Tennessee River to Jasper, Tenn., where the first intermediate field is located; thence in a straight line to Murfreesboro and Nashville. The Jasper field was "natural," requiring only surfacing in preparation for aircraft use. The next field is located at Tullahoma, Tenn., on the National Guard encampment. The Interstate Airlines airport and operating base "Tennessee Sky Harbor" is used at Murfreesboro.

From Nashville to Evansville about 70 of the 135 miles of air-line course lies over a rough, heavily wooded divide betwen the valleys containing Clarksville, Tenn., Hopkinsville, and Madisonville, Ky., on the west, and Springfield, Tenn., Russellville and Greenville, Ky., on the east. The course was chosen after considerable study from the air. Grading and removal of transmission lines was again necessary on this portion of the route, causing considerable delay due to wet weather and inaccessible roads. From Evansville, the airway to St. Louis, 162 miles, and the remainder of the Chicago route through Vincennes, Terre Haute, and Lafayette, Ind., lies in typical Middle West territory and presented no difficult problems in survey and construction. This portion of the airway has been lighted for the past five months.

Broadcasting of hourly weather reports will be accomplished by radio communication stations at Atlanta, Nashville, St. Louis, Indianapolis and Chicago. Adequate service at the present time is furnished by the Atlanta, St. Louis and Chicago stations.

The installation of radiobeacons proved somewhat complicated on account of the impracticability of establishing straight-line courses.

Celebrating the Birthday of Tampa's Air Mail

Air mail's first birthday at Tampa, Fla., was appropriately celebrated recently with ceremonies at the Tampa airport in which post-office the city officials and representatives of Eastern Air Express, Inc., holding the Tampa-Atlanta mail contract, participated.

Above, left to right, Mrs. Elizabeth Barnard, Tampa's air-minded postmistress in her flying togs for the occasion; A. P. Kerr, Florida division superintendent of the mail line; and Mayor D. B. McKay of Tampa. They are standing by a Super-Mailwing plane, a type being used on the line.

Three New Hangars for Candler Field

FOLLOWING the approval of their leases by the aviation committee of the city council of Atlanta, March 24, Beeler Blevins, Doug Davis and Southern Air Transport will each have modern fire-proof hangars at Candler Field, ranging in price from $15,000 to $25,000.

The hangars of Davis and Southern Air Transport will be new throughout. The old hangar occupied by Southern Air Transport has been bought by Blevins and will be moved to the site of his old hangar that was burned.

Space was rented to the builders at the rate of $12.50 per 1,000 square feet per year. Each of these hangars will be approximately 100 by 125 feet.

The Southern Air Transport hangar will occupy the same position as at present. The hangar to be erected by Doug Davis for the Davis Airlines will be in line and directly north of the Southern Air Transport building, with a space of 100 feet separating the two buildings.

The old Pitcairn hangar now occupied by Curtiss-Wright Flying Service will be moved so as to face the east and west runway. The Curtiss-Wright Company announces that it will make extensive improvements if a long term lease now being sought is approved.

Preparation for Night Flying Chicago to Atlanta

Interstate Airlines mail pilots who have been flying the Chicago-Atlanta and Evansville-St. Louis mail routes in daylight, recently moved from their headquarters in Evansville, Ind., to Chicago and Atlanta in preparation for the inauguration of night flying over the Interstate lines.

Pilots M. D. Ator, John Pricer and Joe Hammer moved to Chicago to handle the northern route, while Pilots Lawrence Jamieson, Usher Rousch and Durward Ledbetter moved to Atlanta to fly the southern route at night.

A day shuttle line was started at the same time night service was inaugurated, between Nashville (Sky Harbor) and Atlanta daily. This is for the purpose of serving Nashville and Chattanooga with air mail which would not benefit these two cities were the night routes to be operated alone.

Chief Pilot E. B. Fricks and Pilot Larry Harris, instructors at present in the Sky Harbor Flying School operated by Interstate at the Nashville air terminal, probably will fly the day shuttle route, officials stated. Two other pilots Norman "Pop" Wise and Paul Schludt, will be kept as reserves at Evansville and Chattanooga, it was said.

The above photograph was taken during the opening of the Greenville, Ala., airport, January 16. The field was established by the Lions Club of Greenville and presented to the city. Planes from Maxwell Field, Montgomery, and the Montgomery School of Aeronautics attended the opening celebration. The field is located three miles northeast of Greenville and is reported to be well marked. U. S. Air Corps photo

Tulsa-Wichita Passenger Service Opened

Air passenger service between Tulsa and Wichita was inaugurated March 11, by the United States Airways. The company operates seven all-metal planes, making two round trips daily.

The company now operates between Kansas City and Denver, and proposes another extension from Kansas City to Oklahoma City by way of Wichita and Enid.

300 Percent Traffic Increase for Southern Air Transport

Southern Air Transport, division of American Airways, established a 300 per cent increase in February over its previous monthly average of passengers transported.

The increase, from an average near 500 a month to 1527 in February, followed announcement of reduced rates, which make Southern Air Transport fares equal to combined rail and Pullman charges.

At the time these reductions were announced, Southern Air Transport also announced inauguration of a new passenger service between Ft. Worth and Dallas and Cleveland, Ohio. Southern Air Transport handles Cleveland passengers to Kansas City, where they are picked up by Universal Air Lines, another American Airways subsidiary. Universal Air Lines also operates from Tulsa to St. Louis.

Southern Air Transport in February flew 108,669 miles, during 1,126 flying hours, at an average speed of 100 miles an hour.

Completion of Airport at Dunedin, Florida

The finishing touches are being added to the Dunedin, Fla., airport. A steel hangar of five-plane capacity is already in use, and complete landing and take-off facilities will be available immediately. The runways have been graded and leveled and are being treated with a top surfacing of crushed shell.

One runway northwest to southeast is to be 1,200 feet long, while the other running at right angles is to be 900 feet long. Both runways will be paved with concrete.

The field is located on the bay front, and plans call for installation of seaplane facilities later.

Curtiss-Wright Flying Service, which has a large air field and plant at Grand Prairie, between Fort Worth and Dallas, has opened an office in Fort Worth in the Petroleum Building. R. O. Dulaney, Jr., is in charge. The office will handle applications and furnish information regarding the flying school, airplane and engine sales, airplane and engine parts and service for planes which are included in the company's activities.

Air Mail Speed Records in the Southeast

Wind of gale force in the Southeast recently boosted airmail planes flying the New York-Atlanta-Miami airway to such speeds that records for flying between Atlanta and Macon and between Macon and Jacksonville were shattered. A third mail craft, flying north from Atlanta, equaled a previous record flight to Greensboro.

Frank J. Andre, airmail pilot for Eastern Air Transport, Inc., operators for the Government of the New York-Atlanta-Miami route, took off from Atlanta and sped southward to Macon, covering the 77 air miles in exactly 25 minutes. A. P. Kerr, superintendent for the Eastern Air Transport line between Atlanta and Florida points, took off from Macon and in 65 minutes covered the 210 miles from there to Jacksonville. These two flights created new records for high speed between those cities.

A third pilot of this line, Gene R. Brown, took off from Atlanta with the mail for New York, and covered the distance from Atlanta to Greensboro, N. C., in two hours even, averaging 153 miles an hour. Kerr's average speed was 200 miles an hour and Andre's was 180 miles.

One of West Virginia's Pioneer Airports

The accompanying photograph snapped from the air is of a section of Shepherd Field, the self-supporting municipal airport, of Martinsburg, West Virginia. Shepherd Field is said to be rated by officials as one of the best and oldest airports in the state of West Virginia, having been in continuous operation since 1922.

At present the total acreage approximates 60 acres, with large runways extending in four directions. Needless to say, a field of this size can and has accommodated practically every type of ship produced, including army pursuits and bombers. In addition, it is well drained and without obstructions. For several years various military units have carried on their annual maneuvers here, including the famous 99th observation squadron of Boling Field and the Maryland National Guard observation squadron commanded by Major W. D. Tipton of "War Birds" fame.

In the photograph may be seen the one-ship hangar of R. R. Feller, operations office, Mr. Feller's Monocoupe, underground fueling system, water tank which furnishes the entire field with running water, refreshment stand and parking space.

Shepherd Field, Martinsburg, West Virginia's Municipal Airport

Commerce Dept. Buys New Airway Sign Flashers

A contract for 100 sign flashers of a new type incorporating a mercury tube make and-break instead of the old style metallic contacts has been awarded by the Department of Commerce, according to Major Clarence M. Young, Assistant Secretary.

The sign flasher is employed in electric code beacons which are stationary auxiliary lights mounted on towers between beacons for use as obstruction lights, as markers for landing fields or for other areas where identification by night is of assistance to pilots. The code beacon throws a 360-degree beam and is flashed at intervals by means of the sign flasher which may be controlled to flash code if desired.

Mexican Airports of Entry Are Established

The Mexican Government has recently designated the following cities as airports of entry for customs purposes: Matamoros and Nuevo Laredo, in the State of Tamaulipas; Piedras Negras, in the State of Coahulia; Ciudad Jaurez, Chihauhua; Nogales, Sonora; Mexicalia and Tiguana, Lower California, for the northern border; San Miguel de Cozumel for the Quintana Roo littoral; Progreso, Yucatan, for the Gulf Coast, and the town of Mariscal for the Guatemala border.

International air service will be conducted via these ports, both for regular lines established in the country or in the United States or in Guatemala, as well as for all other flights. Offices of immigration, sanitary and customs authorities are being established at these cities to carry out the necessary inspection.

Experimental Radio-Telephone Service Established

Experimental radio telephone communication service from plane to ground and ground to plane along the airway between New York and Chicago, will be in operation in the near future under plans now being carried out by the Airways Division of the Aeronautics Branch, according to recent announcment by Major Clarence M. Young.

This experiment is being carried on in order to study the usefulness of high frequencies for radio telephone broadcasting from airplanes in flight along the airway and over various kinds of terrain, to ground stations.

New Route from Mexico to New York

A new air-rail route from New York to Mexico, which will have San Antonio, Texas, as one of its principal terminals, may become a reality in the near future, it was announced by Porter Whaley, general manager of the San Antonio Chamber of Commerce.

The Inter-Americas Air Lines of New York, a newly formed aerial organization, has proposed the new route and is now engaged in making preliminary steps toward its completion, Whaley said.

Present plans of the company call for travel by rail from New York through St. Louis to Texarkana, Texas, where passengers will make connections with the new air line, it was stated.

Rates on the Southwest Air Fast Express lines between Fort Worth-Tusa-Kansas City have been reduced to 4.6 cents per mile. An afternoon schedule has been added. Daily passenger service has also been inaugurated between Big Springs and Midland, to connect with the main line at Sweetwater, Texas.

Flying Activities at the Kansas City Airport

There was no appreciable slump in passenger travel during the month of February, according to the records at the Kansas City Airport. There were 1,259 passengers who either landed or took off from the field during that month, and this in spite of one of the coldest winters in years. This does not include the number of arrivals and departures of passengers on the Universal Air Lines, which uses Fairfax Field as its terminus. At this same field there are daily 24 arrivals and departures of air mail and passenger transport planes.

At the Kansas City Airport there was an average of 50 take-offs per day and the same average number of landings in the month of February. Including all kinds of flying—air mail, transport, schools, passenger flights, private local operators, transient, United States army reserves—there were 1,520 take-offs and 1,535 landings. During this same month 1,614 pilots or passengers landed and took off, an average of 54 per day. This gives some idea of the extensive amount of flying going on at this field.

New Passenger Station at Kansas City Airport

One of the show places of the Middle West, and the pride of Kansas City is the new passenger station at the Kansas City Airport. This station has complete facilities for the air traveler, and is as attractive architecturally as it is convenient. It was designed by Edward Tanner, noted architect of the firm of J. C. Nichols, widely known for his city-beautyfying efforts. The Kansas City terminal comprises all the best features of airport structures, both in this country and abroad, and it is designed so that it may be added on to without losing any of its attractiveness.

Weather Reports Available from Galveston Station

Through special arrangement with the Coast Artillery station at Galveston, the Southern Air Transport is offering to pilots flying in the territory covered by its system complete weather reports from Galveston.

The reports, including the winds aloft reports, invaluable to pilots, are broadcast from the government station over their short wave length radio at 9:30 each morning and received by the Southern Air Transport station at Houston, which in turn relays them to all points in the S. A. T. radio system. At these points it will be available to anyone desiring the information.

103,498 Miles for Each Forced Landing

STRIKING proof of the steadily increasing reliability of airplanes and airplane engines is presented in the performance record of National Air Transport for the month of February, during which N. A. T. mail and express planes flew a total of 206,997 miles with only two mechanical forced landings, according to E. P. Lott, manager of operations. This is 103,498 miles of flight for each mechanical forced landing. Of these two forced landings, one was caused by a short circuit with resultant ignition trouble, and the other was due to failure of pressure in the fuel tank. In one instance the airplane was damaged in landing, but with no injury to the pilot, while in the other the plane was undamaged.

Extension of Services by S. A. F. E. Lines

Daily air passenger service between Big Spring, Midland and Sweetwater, Texas, and Tulsa, St. Louis and Kansas City has been established by the Southwest Air Fast Express.

Bob Cantwell, operations manager of the company, said that the line from Midland to Sweetwater is the first development of an extension to the Pacific coast contemplated by the S. A. F. E. line.

Two Lockheed-Vega ships are assigned to the Midland-Sweetwater extension, of which C. R. Bailes has been appointed manager.

Traffic Record of Mexico Guatemalan Line

The Mexican and Guatemalan services of the Pickwick Latin American Airways carried 1,377 passengers and 1,108.467 kilos of mail between the date of their inauguration, July 29 and December 31, the Mexico City offices of the Company officially announce. Business of these divisions showed a considerable increase during January. In that month 278 passengers were carried, a fifty percent increase over this traffic for Decmbeer, and 390 kilos of mail.

The Mexican and Guatemalan divisions employ twelve pilots, all Americans, each of whom has had more than 2,000 hours flying experience in the United States.

New Administration Building at Fairfax Airport

What is generally conceded to be the most complete air terminal structure in the country is the new administration building at Fairfax Airport. This building, which is already spoken of as one of the show places of the Middle West, will be dedicated on the 3rd of May. Among the many services offered to the air traveler will be a spacious waiting room, ticket office, cigar and newsstand, telegraph office, barber shop, soda fountain, baggage dock medical suite, rest rooms for men and women, a dining room which will seat 252 people and with space in the center for dancing, and sleeping accommodations for 42 in one wing.

Airways Weather Bureau for Fort Worth

An airways weather bureau has been authorized for Fort Worth, Texas, and some of the equipment for the station, at the municipal airport, already has been received. Hourly observations are to be broadcast.

Mexican Aviation Company Buys Another Fokker

The Mexican Aviation Company has taken delivery of a Fokker-10 plane, representing an investment of $65,000. It will be used in the company's Mexico City-Tampico-Brownsville, Texas service.

The Huntsville Chamber of Commerce and the Madison County post of the American Legion, Huntsville, Ala., are endeavoring to secure the establishment of an airport in Huntsvile. A committee, composed of the following Huntsville citizens, has been appointed to appear before the city council and county commission, to ask support of the project: M. M. Hutchens, Jere Murphy and J. M. Gill.

The loss of four air mail planes by fire at Hadley Field, New York, recently did not prevent Eastern Air Transport from doubling its air mail service along the New York-Atlanta-Miami route, April 1.

NEW AIRPORT DEVELOPMENTS

Troy, Ala.—A municipal airport for this city has been assured following the acquisition of an 80-acre tract two miles from the city on the Troy-Elba Highway.

Huntsville, Ala. — A committee composed of R. E. Smith, M. M. Hutchens, Jere Murphy and J. M. Gill has been appointed to represent the American Legion and the Cnember of Commerce in securing an airport for this city. Several sites are already under consideration.

Mt. Dora, Fla.—Plans for erecting an airport in the Golden Triangle have been launched by the Kiawanis Club here. Runways 3,000 feet asphalt covered are called for in the plans.

Vero Beach, Fla.—A beacon light was turned on at the local airport the latter part of February. The port was dedicated March 3rd and 4th.

Fort Pierce, Fla.—Development of a 167-acre tract into an airport is under way here. Runways 1,700 feet long are being conditioned. The tract borders the Dixie Highway, about two miles south of the city.

Lake Wales, Fla.—Area of the the Babson Airport here is being increased by the addition of a 40-acre tract. Additions will be made from time to time until the airport comprises 320 acres.

Titusville, Fla.—A new airport was dedicated here in March.

Panama City, Fla.—The local Chamber of Commerce is working toward the establishment of a municipal airport here. A combination land and seaplane base is under consideration.

Vero Beach, Fla.—Noted fliers, including Lee Schoenhair, Freddie Lund, Red Jackson, Sewannee Taylor, and Margaret Thomas, took part in the dedication of the Vero Beach airport, March 3 and 4. Prizes totaling $1,000 were given the winners in the various contests. The field is located in the heart of Vero Beach.

Wachula, Fla.—Plans are being formulated for the development of an airport here.

Jacksonville, Fla.—The Standard Oil Company has recently installed concrete anchors and other facilities for seaplanes in the St. Johns River at the rear of their office building here.

Acworth, Ga. — The Government beacon on the Chicago-Atlanta airway here was turned on March 1. The beacon is of 2,000 candle power. The field here is suitable for landings and take-off in all directions.

Lexington, Ky.—A tract consisting of 250 acres has been leased for ten years by the city of Lexington for use as an airport. The city has an option to buy the tract at $500 per acre at the expiration of the lease.

Bogalusa, La.—Improvements are under way at the local airport.

Tchula, Miss.—A small airport is planned for this city. Ground has been bought.

St. Joseph, Mo.—A two-story reinforced brick and concrete treminal building will be built here at a cost of $40,000.

Charlotte, N. C. — Improvements at the local airport have been completed and the field is now lighted for night flying. Air mail service was inaugurated April 1 by Eastern Air Transport.

Shawnee, Okla.—Plans for improving the local airport are being made by the Chamber of Commerce with a view to making the city a regular stop on one of the transcontinental air routes.

Tulsa, Okla.—A new wing is being added to the hangar at the Garland Airport. It will be occupied by the Garland Flying School when completed.

Greenville, S. C.—Bids for floodlighting the local municipal airport are now being received. Contemplated improvements involve expenditures of approximately $25,000.

Memphis, Tenn.—The local airport is now lighted for night flying, following the installation of flood lighting equipment March 15.

Columbia, Tenn.—The Graymore airport here is being developed by the Columbia Airways.

Nashville, Tenn.—Vote on a municipal airport will be held here June 26.

Hillsboro, Texas. — Construction work on the Hillsboro and Cleburne emergency landing field has been completed and beacon lights installed and inspected by officials of the Department of Commerce.

Lubbock, Tex.—A 640-acre tract is being conditioned for a municipal airport here. The field is being developed under the supervision of the airport committee of the Chamber of Commerce. Two hangars each 120x120 will be erected soon.

Houston, Tex.—A new hangar, 100x102 feet, is being built here, and boundary lignts, beacon, floodlights, grading, leveling and draining of field are called for in an improvement program, to put the field in first-class shape.

McAllen, Tex.—Final touches are being given the McAllen-Hidalgo field prior to throwing it open to air traffic. Two new hangars are proposed.

Port Arthur, Tex.—Department of Commerce officials have inspected proposed sites for an airport here and definite selection is expected to follow soon.

Hillsboro, Tex.—The emergency field located six miles west of Hillsboro has been opened. A beacon light was turned on March 8, and the field opened a few days later.

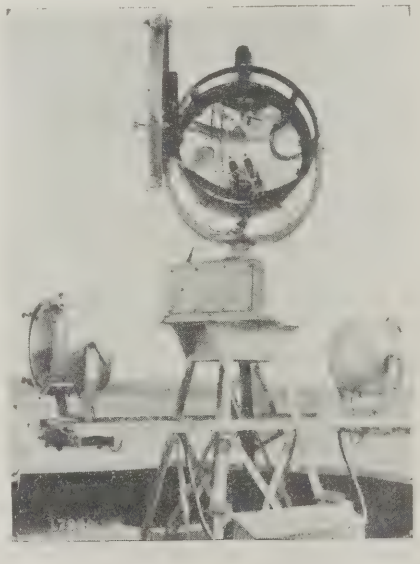
Fort Worth, Tex.—One-half of the $500,000 inbonds voted for a municipal airport here will be offered for sale in May to finance improvements and the purchase of land now under lease.

Cuero, Tex.—A survey of two airport sites recommended by Department of Commerce officials has been made and definite selection of a field will be made soon.

Galveston, Tex.—Work on the municipal airport here will begin soon. Provision has been made by the city to spend approximately $40,000 per year until the airport is completed.

Martinsville, Va.—Work will commence soon on an airport nere.

Hopwell, Va.—Work on the local airport is nearing completion.



Above is shown an installation of the Crouse-Hinds type DCB revolving beacon at an airport, with the two course lights pointing along the route of the airway. The beacon revolves approximately six times a minute. Its power depends largely upon the topography of the country and upon atmospheric conditions. In flat countries, where there is little or no fog, a 1,000-watt, 110-volt lamp in T-20 bulb with monoplane filament is commonly used. Where more power is desired, the 900-watt, 30-volt lamp with T-20 bulb with monoplane filament is more satisfactory, while still greater power is secured by using 1,500-watt, 32-volt type of lamp with a G-40 bulb having the monoplane filament.

Standard Airlines Open New Terminal at El Paso

Construction has been completed on a new air terminal depot to replace the one which was destroyed by fire recently on the El Paso field of the Standard Airlines, Inc.

The new depot is of Spanish Mission architecture and of fire proof construction throughout. It is much larger and more elaborate than the former building and contains five private offices in addition to a large passenger waiting room, a radio room, and tower and baggage room.

Aeronautical Personalities

Charter Member of Aero Club of America

AMONG the most enthusiastic of Jacksonville's air-minded citizens is a white-haired man with a twinkle in his eye and a face which lights up as he talks of the days when he helped to organize the original Aero Club of America. Winslow E. Buzby, now a resident of Jacksonville, was a charter member of the organization.

The club was founded in the summer of 1905, in the days when aerial navigation was confined to free balloons, and the Wright brothers were struggling with their invention behind high fences which obscured them from the eyes of a curious public.

The objects for which the club was formed were set forth in their constitution but may be summarized in the brief statement, "for the promotion and development of the science of aerial navigation."

"While enthusiastic," Mr. Buzby laughed, "the club membership almost without exception, had never made an ascension in a free balloon. It soon made a place for itself in the world of sport, however, and opened a club house in New York.

"The annual dinners were quite an event and we felt extremely honored when Orville and Wilbur Wright were present at one of them. They were the only members at that time who had really flown. Later, Augustus Post, made a flight and escaped with his life. At that time it was not possible to take a pilot along for a hop, so Post had to be his own pilot. With considerable hedge-hopping he managed to get back alive."

In reminiscing, Mr. Buzby told of the purchase of the "Centaur," one of the two balloons bought by the club. The "Centaur" made the trip from Paris to Russia in 1900. So anxious were the members to get ascensions that lots had to be drawn to keep peace.

One of the honorary members of the club, Lieut. Frank P. Lahm, was the first winner of the Gordon Bennett Cup race in 1906. The races were held under the auspices of the Aero Club of America. Therefore having won the prize, the club organized the contest for the succeeding year.

According to Mr. Buzby, several members of the club went to Paris where they were taught to become balloon pilots.

"In the days of Pilatre Rozier," said Mr. Buzby, "the way of becoming a pilot was to get your own balloon and go up in it. That made you a pilot. Of course, if anything happened to it, and you had to walk back, you were a dead pilot, but a pilot just the same."

Admiral Byrd returning from his Anartic expedition established a record for long distance telephone conversation on March 11 when he chatted with Adolph Ochs and others at Schenectady, N. Y., from Dunedin, New Zealand, a few hours after his arrival there on the return trip.

The differences in time between the two cities involved were: Schenectady, 7:30 A. M., Tuesday, early spring; Dunedin, 12:30 A. M., Wednesday, early autumn.

LIEUTENANT APOLLO SOUCEK, shown above, for outstanding achievements in aviation in 1929, was awarded the Spartan medal at a banquet held March 15. The award is made yearly to the Oklahoman making the most outstanding contribution to advancement of aviation. The banquet was tendered Lieutenant Soucek by the Oklahoma State Chamber of Commerce, and was attended by Governor Holloway and other noted Oklahomans. Captain Ira C. Eaker, chief pilot of the Question Mark, received the award in 1928.

Flying Airport Head is Accomplished Aviator

Lieutenant Otto Melamet, president of the Park Heights Flying School, Baltimore, Md., is one of the most accomplished aviators in this city.

His first interest in aviation began in 1916, when he acepted a position as draftsman with the American Propeller Company, now the Paragon Engineering Company. During his stay with the company, he experimented with a flying boat of his own design, but never left the water. The following year he enlisted in the Army Air Service, training at Mineola Field, now known as Roosevelt Field. When war was declared he was sent to Great Britain, where it was his duty to fly airplanes, purchased by the United States from the British aircraft manufacturers, from factory to the front.

He came back to Baltimore in 1920 and the following year received his commission as a first lieutenant in the Maryland National Guard. In 1925 he went to Miami where he opened an aerial taxi and sightseeing service. He came back to Baltimore in 1927, at which time he formed the Park Heights Flying School and leased the present Park Heights Flying School. He takes an active part in all local aviation activities.

After three years of piloting at Bowman Field, High O'Daniel, Louisville pilot, has been named operations manager and chief pilot for Curtiss Flying Service, at Raleigh, N. C. O'Daniel started here with the old Cardinal Fliers, Inc., and became identified with Curtiss, when the latter bought out Cardinal, and developed it as its Louisville operation. O'Daniel is the last of the Cardinal boys, or of the crew that was in Louisville for Curtiss under Ted Kincannon, who left the Curtiss Service a little more than a month ago. O'Daniel reported at Raleigh early in March.

Miss Dorothy A. Lyon, office manager for the Consumers Cake Company, is tne most recent Kansas City girl who has won her wings. She is a Curtiss-Wright student, and made her first solo flight at Fairfax Field not long ago.

Feminine Flyers Comment on Airplane Stunts

AIR-SHY folks and even some who are not so air-shy often look askance at this business of airplane 'stunting,"—exhibition flying is, perhaps, the better term. They wonder what's the good of it anyway?

Now this isn't an argument either for or against stunting. It's merely the record of a conversation with the wives of two stunting pilots, while these pilots were "doing their stuff" in the sky above, and also with a rather remarkable little person, a 17-year-old girl but a veteran stunter, who had to run away from the party every few minutes to take her turn in thrilling the crowd nearby.

The three wre chatting gaily at the Miami municipal airport. They were Mrs. Freddie Lund, wife of the daredevil who nonchalantly does the outside loop whenever the mood comes upon nim; Mrs. Dale ("Red") Jackson, wife of the co-holder of the worlds endurance plane record; and Miss Margaret Thompson, a veteran stunter, petite, Titian haired and charming.

The question, "What do you think about flying?" was enough to start Mrs. Lund off enthusiastically.

"Why, I think it is as safe as anything, if you know what you're doing, and I am learning fast. I like stunting, too, and I think it is just the thing to teach you more about flying. Of course, I can't do all the things Freddie does, like keeping my feet on the controls when I'm flying upside down, but I'll learn."

Mr. and Mrs. Lund were married last June, and after the wedding there followed a honeymoon tour of 20 states.

"My husband watches over me and sees that I do everything right," she said. "He's teaching me to stunt, but he won't let me go up if he isn't absoutely sure it is safe. I'm getting along fine, and one of the first things I learned was to take my time about everything I did in the control of a plane."

Miss Thomas, who had slipped away during the ronversation to take her "turn" in the air, came skipping back to the party.

"Stunting is more fun than a million dollars," she said, and it teaches you more about flying than you can learn any other way. If you can hold your position and feel comfortable flying up side down, it's a sure thing you can handle a plane better in normal flight."

STUNT team of the Curtiss-Wright Exhibition Company, which is training in Miami preparatory to a nation-wide tour. The team is to put on exhibitions of daredevil stunts, and a pioneer pilot and some of the first planes manufactured by the Curtiss Company will be exhibited to show the advance made in aviation during the last 20 years. Left to right, Dale ("Red") Jackson, J. LeRoy McGrady, Margaret Thomas, Freddie Lund and Swanee Taylor.

This little flier, who is so tiny she must stand up in the cockpit in order to see how to land her ship, according to her own admission, and uses her parachute "and other things" to put her forward in her seat so that she can reach the controls, does loops, dead stick landings, the falling leaf or anything else any of the other fliers of the Curtiss-Wright Exhibition Company, with which she was recently connected, can do with the exception ,perhaps, of Lund's nerve-racking outside loop.

She has been flying a plane for three years, enough time for her transport license at the age of 14, she said, but her "job" with the exhibition company was the first chance she has had to make any money from flying.

"I was thrilled to death over it," she admitted. "When I first started out, I had to pay $5 a lesson. I had an awfully hard time to get the money together, and I was so young they wouldn't give me a chance."

She has "millions of hobbies," she confessed, and "likes everything"—horseback riding most of all. She was born on a ranch in Texas, and when she took up flying, her father didn't object, "because he is rather a nice person, you know," and perhaps, although she didn't say so, he knew it was useless to argue with a "red-head."

Mrs. Lund and Mrs. Jackson had been carrying on spirited comments all this time on the fliers aloft and "betting" on their husbands to win.

"And what do you think of flying?" Mrs. Jackson was asked.

'It's the only way to get places," she said. "I don't fly because I think one flier in the family is enough. Riding with him (Mr. Jackson) is enough for me. Flying, I think, is useless unless you can make commercial use of it."

Left to right: Mrs. Fred Lund, Mrs. Dale Jackson and Miss Margaret Thomas

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John E. Pratt has been appointed demonstrator for the Glider Division of the Detroit Aircraft Corporation. Pratt recently returned to the United States from Germany where he finished a course in the Rhon Rossitten Glider School, the second American to complete the entire course.

A. P. Barrett on Vacation in South Sea Islands

A. P. BARRETT, president of the Southern Air Transport division of American Airways, Inc., and vice-president of the Aviation Corporation capitalist and firm believer in the efficacy of work, is now taking the second vacation of his life. He sailed recently on a South Indian cruise.

Mr. Barrett began his career of consistent effort that has finally brought him to the fore as one of the biggest men in the aviation industry, as a youngster back in Tennessee where he applied himself industriously to his studies in a little country school. When his family moved to Texas, young Barrett continued his studies and then began his career as a teacher. Later he

A. P. Barrett

was elected to the Texas Legislature, going first to the House and then to the Senate, meantime studying law in the University of Texas.

In 1921 Mr. Barrett began his first work of organizing public utilities, that led him later into the field of air transportation. Beginning with a small natural gas distributing plant, he built up a company owning public utility plants all over the Southwest. The next step was into transportation. After developing a large system of motor bus lines, he gave his attention to the possibilities of air travel purchasing the Texas Air Transport as a nucleus for his organization. From this original company, Mr. Barrett moulded the Southern Air Transport.

Feller Finds Recreation in Flying

Most business men when tired out from the day's grind will wait until evening and hunt a good movie. Not so with R. R. Feller, of Martinsburg, West Virginia. Instead, he will pick a convenient hour when he can leave his office and drive to Shepherd field, the local airport, climb into his Monocoupe and zoom off into the sky.

Since the war Mr. Feller has been

R. R. Feller

very active in aviation as a non-flyer. Having participated in various aeronautical activities as well as being instrumental in the establishment and maintenance of the local airport, he is quite well known in aviation circles, however, it was not until September 1929 that he purchased his ship. He soloed quickly and to date has 150 hours of actual flying time chalked to his credit.

H. B. Poindexter has assumed charge of the Miller Municipal Airport at Winston-Salem as manager and chief pilot. He has been connected with the Curtiss orpanization at Raleigh for several months. He has been actively engaged in aviation since 1917, when he enlisted in the air service at Kelly Field, Texas.

Albert W. Price continues as vice-president of the company and will cooperate with Mr. Poindexter in the management of the field.

Floyd B. Smith announces that he has severed his connections with the Switlik Manufacturing Comany, of Trenton, N. J., manufacturers of the "Floyd Smith Safety Chute." Smith developed the manually operated, free-type parachute, which is widely known throughout the world, while connected with the army at McCook Fied in 1918, and is an old-timer in aviation, having been a pilot back in the days of Lincoln Beachy.

Don C. Walbridge has returned to Kansas City to take over the position of director of flight training for Curtiss-Wright Flying Service. He was formerly employed by this company, and he has resigned from the Army Air Service in order to come back to Kansas City.

Awaiting the Tests Was Her Hardest Task

BARBARA BANCROFT, of Melbourne, Fla., who was recently awarded a limited commercial pilot's license by the Department of Commerce after a course under Captain McMullen, of Tampa, wrote her mother after her examination: "I could hardly sleep I was so scared of the written tests and thought of the flying test simply paralyzed me. The L. C. flight test is almost as hard as the transport test and the inspector bears down harder on the L. C. than on the transport because he knows you are pretty good if you are taking the transport test.

"The next day I waited for my flight test until 2:00 o'clock and really I was almost mad I was so nervous waiting around. The two that had taken the test before my turn came fopped, and the other had to take the test over to please the inspector. Finally my turn came and the minute I hit the plane all my nervousness left me. When I had finished Mr. Puckett, the inspector, said that my flying was the best of any of the flight tests he'd given that day and that he would feel safe to ride with me without any controls in the front cockpit.

"And now I have my L. C. license and I am extremely happy because I had to work awfully hard for it. I am the first and only limited com-

Barbara Bancroft

mercial girl pilot in the entire South."

Miss Bancroft says that golf and swimming are her hobbies and that flying is her business. She has flown several different makes of planes including Travel Air, Waco, Challenger, Curtiss Robin, Ford trimotor, Stinson Detroiter, and others. She is a member of the 99's.

Aside from the inspector test, she says that spot landings are the hardest things she has had to go through with in her flying career.

She Looks Forward to a Career in Aviation

"MY HUSBAND was a wonderful teacher," says Mrs. Ethel Lovelace of Houston, Texas, who has two sons, age five and seven, whom she hopes to teach to fly as soon as their legs are long enough to reach the rudder bar.

Having a mother and father who are both licensed pilots and a Travel Air biplane at their command, it is very likely that these youngsters

Mrs. Ethel Lovelace

soon will be familiar with the controls and that this will be a one hundred per cent flying family in a few years.

Like Phoebe Omlie, Mrs. Lovelace learned to fly under her husband's tutelage and escaped knowing just what sort of tempers most instructors have.

She is secretary-treasurer of the Women's Flying Club of Houston, and one of the "99's." She lists her present occupation as a housewife, but says, "I love to fly and want to make a better flier of myself. When I have perfected my flying the way might open for a career in commercial flying."

Mrs. Omlie Has More Than 1,000 Hours

ONE might think that Phoebe Omlie, holder of transport license No. 199 and mechanics license No. 422, was a regularly employed pilot on a transport or air mail line, judging from the number of hours in the air she has accumuated, having over 1,000.

It all comes about by having an air-minded husband, Captain V. C. Omlie, of Memphis, who holds transport license No. 100. She is one of the oldest women pilots in the South from standpoint of years of experience, and the entire United States. She has flown in every state in the Union and Canada and Mexico. During the course of accumulating more than 1000 hours in the air, she has flown Waco, Monocoupe, Monosport, Stinson, Lockheed, trimotor Ford, Cessna, Bellanca, Ryan, and Monocoach planes.

Mrs. Omlie piloted a plane in the 1928 National Air Tour, Michigan Air Tour, South Dakota Air Tour, Arkansas Air Tour, International Good-Will Tour to Winnipeg, New York- Des Moines race, National Women's Race and in other outstanding aeronautical events. She is a member of the National Aeronautical Association, the F. A. I., Womens Air Corps, Memphis Aero Club, Women's National Aeronautical Association, Derby Pilots, N. A. P. A. and the Ninety-Nine Club. After two hours and twenty minutes instruction under her husband, she soloed. She says that taking off was the most difficult part of her instruction.

Karl S. Betts has been appointed general sales manager of the Detroit Aircraft Corporation in charge of dealers and distributors. Betts for the past number of years has been associated with the Red Path Chautauquas, National Air Tours, Gordon Bennett International Balloon Races, All-American Aircraft Shows, the Detroit Board of Commerre and the National Glider Association.

John Blair Jackson, president of the Columbia Airlines, Inc., Columbia, Tenn., announced that the Lincoln Standard 5-place plane recently purchased by Columbia Airlines, along with a number of others, including a 7-place Fairchild cabin plane of Interstates Airlines, from Murfreesboro, will be in operation shortly.

Lieutenant R. R. Brown, formerly located in Hiwaii, is now stationed at Candler Field, Atlanta, as air officer for the fourth corps area. A hangar will be moved to Atlanta from one of the government fields in the South to house the planes that will be kept at the field for training purposes, it is said.

T. E. Griffin, traffic representative of the Continental Division, Universal Aviation Corporation, was recently in Louisville, from Cleveland, and discussed company plans for equipping the company mail planes on the Cleveland-Louisville route with short wave radio receivers while it is planned to later install sending equipment in the planes for two-way communication.

She Started Her Career Selling Automobiles

MRS. MARY C. ALEXANDER is one of the members of the 99's Club who took aviation seriously from the beginning.

For several years prior to her entry into flying she had been an automobile dealer and says that she was naturally interested in new modes of transportation. She soon sold her automobile business in order

Mrs. Mary C. Alexander

to devote all of her time to flying.

While training with the Curtiss Wright Flying Service in Baltimore she took an active part in flying and promotion work among women.

She has recently accepted a position with the Pan-American Airways in which she says it is her purpose to prove that women are needed in aviation. She was the first woman in the Pan-American organization and is connected with the traffic department, where she makes personal contact and gives special attention to women visitors.

Since joining the Pan-American Airways, she has gone to Havana and Nassau and the West Indies over the Pan-American system and expects to make regular trips to South America to create greater interest in aviation among women there.

She is a honorary members of the Women's Flying Club of Baltimore, Md., and a charter member of the 99's, having attended the first meeting.

In her new position she says that her greatest desire is to make good, not only for herself, but for the sake of all women in aviation.

Frank Reed, of Sarasota, has been appointed chairman of Florida's state chamber's aviation committee. Mr. Redd has been an enthusiastic supporter in the development of aviation in Florida for several years.

General News of THE AVIATION INDUSTRY

Uniform Taxation Urged on Aircraft Gasoline

GOVERNORS of forty-eight states were urged to consider adoption of a uniform policy of taxation on gasoline used by aircraft, in a wire dated March 23 from Frank Phillips, president of the Phillips Petroleum Company of Bartlesville, Okla., one of the nation's largest producers of aviation gasoline.

"This is to urge you to carefully consider question of tax on gasoline used in aircraft," the wire stated. "Pilots and aircraft owners frequently suffer by different state tax policies. Survey shows majority sacrifice rebate privilges because of costly delay and red tape in obtaining refunds. Others constantly make open protest in states which do not offer refunds but instead use the tax to swell hignway funds and other non-aeronautical activities. Speaking for large group of pilots and aircraft owners suggest states consider uniform tax policy to exempt aviation from gasoline tax which works hardship on pioneering industry or apply revenue exclusively toward airway or airport developments which would materially aid all aviation."

Sixteen states collect a tax on aviation gasoline and do not provide for any refund," Mr. Phillips explained in a subsequent interview. "The tax is applied to highways and other non-aeronautical activities. Twenty-three of the states provide for a rebate of the tax. The remaining nine states refund the tax only in instances of commercial use. Even the states which collect and rebate the tax have different policies. Certain of these states alow for evaporation and shrinkage; a few for use in inter-state commerce;

Others if purchased in twenty-five gallon quantities or over and numerous other fixed limitations."

The method of securing the rebate is so complicated and troublesome in practically every state which offers a rebate that few find it possible to take advantage of it, Mr. Phillips said, and added that pilots and others who fly inter-state almost need the services of a secretary to keep them informed on state gas policies and claims for rebate.

"Last year airplaes consumed approximately 40,000,000 gallons of gasoline and the 1930 consumption will easily double the 1929 total," he said. "Even an extremely modest tax on this consumption would create a fund that could be of decided benefit to the aeronautical industry.

"The need for a uniform policy of taxation on aviation gasoline is acute. The adoption of such a policy would certainly be a boon to pilots, aircraft owners and to the industry at large."

Sixty primary training type gliders were sold by the Gliders division of the Detroit Aircraft Corporation during a recent week. The largest order came from W. T. Ponder of Fort Worth, Texas.

THE above photograph shows a group of Arkansas realtors at Little Rock ready to enplane for a meeting at Fort Smith, Arkansas. The party used two of the Command-Aire Company's planes for the trip. From left to right, top row, they are: Oscar McCaskill, president of the Arkansas Real Estate Association; W. S. Daniel, president Little Rock Real Estate Board; Burton E. Vaughan, secretary Little Rock Real Estate Board; and C. H. Richter, Union Trust Company. Bottom row, left to right, Charles M. Taylor, secretary Arkansas Realtors; James E. Rutherford, former president Arkansas Realtors, and Thomas Hatton, chief pilot, Command Aire Flying Services

Baltimore May Become Dirigible Base

HUGO ECKNER, commander of the globe-circling Graf Zeppelin, planned to visit Baltimore, Md., some time in April to make a survey of the city to ascertain the feasibility of establishing here a harbor for a trans-Atantic service. This announcement was contained in a letter from Dr. Eckner to Mayor William F. Broening of Baltimore. Dr. Eckner makes it clear that the Baltimore region is considered to have superior advantages as the western terminus of a regular airship line across the Atlantis.

The proposed visit of Dr. Eckner and survey moves Baltimore nearer its goal of becoming the western terminus of a transatlantic air service. With the construction of the municipal airport at Dundalk, the erection of the big Glenn L. Martin plant at Middle River and the establishment of other factories for the manufacture of aircraft, this city is rapidly assuming a position of prominence in the field of aviation. Its importance in this respect will be immeasurably increased, it is pointed out, if a base for transatlantic air service should be established here.

Dr. Eckner's proposed survey of Baltimore and the possibilities of establishing a terminus here for transatlantic airship lines, has given a new impetus to the move to have the Navy Department establish one of its new dirigible stations in the Baltimore region. It has been learned the Navy Department plans to provide seven additional dirigible stations, each large enough to house an airship of the type of the Los Angeles. One is to be established on the Gulf coast and several on the West coast.

The establishment of a Zeppelin harbor here by Dr. Eckner would be facilitated by the prospect of the navy establishing a dirigible hangar in this section.

Star Aircraft Company Increases Capacity

STAR AIRCRAFT COMPANY, of Bartlesville, Okla., recently has begun increasing plant capacity so that the early year output of one plane a week by summer can be increased to about four a week, according to announcement of Billy Parker, general manager. New factory space built practically doubles the ground covered by the plant. In addition to Mr. Parker, the officials of the company are E. L. Stewart, sales manager, and Charles Peters, chief engineer.

A new two-place cabin job recently was added to the firm's models. Equipped with the new Lambert 90 motor, it was expected to develop a high speed of 120 miles, and maintain a cruising speed of 90 miles an hour. The four models being turned out include the Velie Five, known as Model A; LeBlond 65, designated as Model C; the Genet 80, known as Model D and the Lambert 90, known as Model E. Two approved type certificates have been issued by the Department of Commerce on models A and C, while at the time the plant was visited, approval was expected on Model D, and Model E plans were being repared to be sent into Washington.

"We believe our Model E will meet a real demand," said Mr. Stewart. "It is equipped with the new Oleo landing gear, the fuselage lines are refined, and the stabilizer is adjustable in flight. It has a cabin heater, and its cruising radius will be 400 miles on a 26-gallon gasoline capacity. Oil consumption is negligible."

Two flying clubs have been formed among the purchasers of this firm's ships, one of eight members and the other of six. All except four of the members had made thir solo flight, spend more than 200 hours on each of the two approved type ships, without a single accident. Fifteen students were in the Billy Parker School of Aviation, which is operated chiefly to teach purchasers to fly their planes.

Three of the most interesting recent purchasers were Osage Indian boys, who at the time the field was visited were well on their way toward becoming skillful flyers. One had in 115 hours, another 75 and the third 32 hours of flying at that time.

"So much of our product has been absorbed in the immediate vicinity of the factory that, with our limited production, we have been unable to reach out very far for business," said Mr. Stewart. "Last week we sold four ships, two to the Phillips Oil Company, one to George Kimes and the other to Thommy Atkinson, of Pittsburgh, Kan., who last year was mayor of that city and now is a flying enthusiast."

N. A. A. Chapter Formed at El Paso, Texas

Headed by Frank Meyer, a chapter of the National Aeronautic Association was formed recently at El Paso, Texas, with 35 charter members. Meyer is aeronautic director of tne Hotel Hussman, a N. A. A. chain hotel.

Since that time the members have formed a women's organization to function in cooperation with the chapter. There are eight charter members. Plans also are under way to organize high schol boys and girls into a junior N. A. A. chapter.

The Hotel Hussman plans the erection of a two-story addition to house aeronautic activities, it was stated. The first floor will contain officers for airlines, while the second floor is to be given over to rooms for pilots.

Jack Stewart, sales manager, left, and Charles Peters, chief engineer, with one of the Star Aircraft Company's cabin monoplanes

Record Flight New York to Buenos Aires

RECORDS for elapsed time and actual flying time between New York and Buenos Aires were established by Lieutenants Will W. White and Clement McMullen, who left New York (Newark Municipal Airport) February 14 and arrived at Buenos Aires on the afternoon of February 19. The actual flying time was fifty-two hours and fifteen minutes, and the elapsed time five days and five hours. Stops for checking equipment, refueling, and rest were made at Miami, Panama, Talara, Lima, Arica and Santiago. The average speed for the 6,870 miles was 131 miles an hour.

The record flight was accomplished with a Lockheed Vega powered with a Pratt & Whitney Wasp, fueled with Stanavo aviation engine oil and Stanavo gasoline. Radio communications were maintained through the facilities of Pan-American Airways, Inc., which loaned special equipment. The same Lockheed airplane and Wasp engine, which performed perfectly throughout this trip, had already covered more than 50,000 miles when Lieutenants White and McMullen started their record flight.

The airplane was purchased originally by the Standard Oil Company of New Jersey and was flown extensively in this country, as well as in Europe, by Major E. E. Aldrin, head of the company's aviation activities. Last fall when the Standard Oil Company of New Jersey, together with tne Standard Oil Company (Indiana) and the Standard Oil Company of California, formed the Stanavo Specification Board, Inc., with Major Aldrin as vice president, the Lockheed airplane was turned over to the new organization for use in testing fuels and lubricants it was developing.

The South American flight of Lieutenants White and McMullen served as a further test of these products. For the first time, the N. A. C. A. cowling was used in tne tropics, and Lieutenant White reports that there was no indication of overheating. The flight from Santiago to Buenos Aires necessitates a rapid rise from sea level to twenty thousand feet, with consequent temperature changes.

According to Lieutenant White, the flight demonstrates the practicability of the Pacific Coast route as an airline to South American cities and the reliability of modern commercial aircraft over long distances.

Mid-South Aeronautic Association Formed

DEVELOPMENT of aviation in the South took a stride forward with the formal organization of the Mid-South Aeronautic Association at a convention at Memphis, Tenn., March 27 and 28. A sound program for the year ahead, and for years to come, was mapped at the convention, at which were representatives of the states of Mississippi, Arkansas, Louisiana, Alabama, Missouri and Tennessee. Tne program includes:

Concerted effort for uniform state legislation governing aviation, conforming to the Department of Commerce flying regulations.

Establishment of more and better airports throughout the Mid-South, but with care to be exercised that over-enthusiastic small cities do not undertake to build magnificent airports at the start, and with an eye always to comfortable terminal facilities for air travelers.

Sponsoring of a movement to have the Southern Association of Commercial Secretaries at their next convention take steps to have an aviation division established in every Chamber of Commerce in the South.

Establishment at airports of a government weather bureau, by which pilots and travelers everywhere may be kept informed up to the minute on weather conditions.

The convention moved with clockwork regularity, and its success was reflected in the enthusiasm of the delegates. A constitution and by-laws was adopted, officers for the year were elected, committees were appointed and a banquet on the second night topped the meeting.

The first year's officers are:

Major Robert Haverty, of Memphis, president; Anker Hansen, Memphis, first vice president; W. Hayden Brooks, Birmingham, second vice-president; R. E. Logsdon, Memphis, third vice-president, and John C. Ottinger of Memphis, secretary, treasurer and manager. Ottinger is director of the Aviation Division of the Memphis Chamber of Commerce, which, with the Memphis Aero Club, originated the Mid-South association idea and carried the brunt of the work to make it posible.

Directors were appointed as follows:

Arkansas—Moorehead Wright, of Little Rock; A. G. Williams, of Fort Smith, and Felix Smart, of Pine Bluff.

Mississippi — Gus Hawkins, of Jackson, and W. L. Shelton, of Greenville.

Louisiana—Col. J. H. Jouett, of New Orleans, and C. W. Longwill, of Shreveport.

Alabama — Sumpter Smith, of Birmingnam.

Tennessee—Howard Stovall and Horace Houston, of Memphis, and Judge Albert Williams of Lebanon.

Missouri—Capt. George Foster, of St. Louis.

The officers and directors will select the next convention city, with Birmingham the favorite, although Shreveport also is bidding strongly for it. Birmingham's new million-dollar airport will be completed by then, and the convention is sought as part of the dedicatory exercises. D. W. Sanford, designer of the airport, was one of the Birmingham delegates.

Talks at the convention brought out a wealth of information and ideas. Among the most striking were:

The South has been backward in aviation while the North has been too forward, with the result that the former is in a position to cash in on the latter's expensive mistakes.

The time is not far off when state highway departments will own and operate airplanes to map and lay out roads, and when the state and federal governments will use them extensively in flood control work, especially using them constantly during high water time to keep watch over thousands of miles of threatened levees.

Each state eventually will have a series of emergency landing fields along each established air route within its borders, with Tennessee showing the way. Tennessee already has passed a law for such emergency fields, to be rented from farmers, who will plant them to cover crops and maintain them, the fields to be closed enough together that any plane that develops trouble at a cruising height will be able under ordinary conditions to glide to one of them.

Arkansas already has 16 airports, and that state has extended facilities of the State Highway Department to cities desirous of creating airports.

Aviation must be gone into on a business basis, from a cold, dollars-and-cents viewpoint, if it is to succeed—and a survey shows that it is more than paying for its additional cost to industries and businesses that are using it.

Probably the keynote of the convention was struck by C. S. (Casey) Jones, president of Curtiss-Wright Flying Service, Inc. He told of the rapid strides now being made in the South.

"The South has been backward," he said. "Only during the last six months has aviation made real progress here. Now it is developing rapidly, but sensibly. On the other hand, the North went into aviation too fast. It built numbers of expensive airports, and wasted money by the hundreds of thousands of dollars.

"Profiting by the North's mistakes, the South is getting real value for its money, and is avoiding the mistakes in airport planning and service for which the North has paid.

"The result is, the South is laying a firm, sound foundation and will show more actual progress in less time for less money than the North did."

Possibilities of aviation in the South were discussed by W. W. Meeks, business manager of Southern Aviation, who urged that it be kept on a business basis.

"Aviation must approach industry as a dollar-and-cents factor to render dollars and cents value," he said, "and it is doing it. I now am making a survey of industrial uses of airplanes in this country. I have noted in nearly every reply to my questions that industrial leaders say their airplanes are more than paying for their additional cost and are performing services not possible with other means of transportation."

Flying School Organized at Mobile, Ala.

The Wright Aeronautical School and Hutchison Flying School have been organized at Mobile, Ala., by Dr. Miller Reese Hutchison, well-known inventor. Dr. Julius T. Wright will have charge of the aeronautical school, assisted by Fritz Maser. Dr. Hutchison will be assisted in the flying school by his son, Jack Hutchison. Classes and ground work will be held at the University Military School.

Rickenbacker Sees Great Gain in Air Travel

THE coming summer will see the biggest increase in air travel the country has yet known. Witnin ten years virtually every traveller will use the air services. Airplane travel will, within three years, be by far the safest means of travel known. Coast to coast by airplane in ten hours will be commonplace by 1940.

Captain Edward V. Rickenbacker, vice president and director of sales for the Fokker Aircraft Corporation of America, made these predictions recently as the result of a nation-wide tour of the air lines.

"Air travel," he said, "has today been sold to a far wider public than the industry had ever counetd upon reaching so quickly. Despite the off season all lines are crowded with the patronage of the average traveler as a result of the cut in rates.

"Criss-crossing from Cleveland to Los Angeles and from Spokane and Winnipeg to San Antonio and El Paso, you can find almost every line crowded with commercial travellers, women tourists—just the average sort of folk you'll meet in every Pullman car. Aviation need no longer make its appeal to those who, supposedly, can pay a luxury rate. The present rate may be too low. But the patronage in this off season indicates that, with the pressure for air passage when the real travel season begins, this wider public will accept the slight increase in rates that will make the operations of the lines profitable on the volume indicated.

"The importance of this widened demand cannot be overestimated. In many respects the industry is in excellent shape to meet it. Safety measures are progressing admirably. The most important of these at the present time are the two-way wireless communication sets, the increase in the number of weather reporting stations and their better strategic location, and the development of accurate dispatching systems for the air lines.

"These measures will take the guess work out of flying. They will be supplemented this summer by the better development of the artificial horizon, the radio beacon and the automatic pilot. With these devices on a plane the pilot can assume his proper functions, like those of the captain of an ocean liner. He will be free to exercise skilled judgment as to the course to be flown, in the light of full knowledge momentarily supplied to him. His judgment will be supplemented by that of the dispatcher on the ground who will not only know from moment to moment the position of each ship but the flying conditions that surround each ship for many miles in all directions as well as along its course.

"With all of these elements of risk removed from flying, I say it will be safer than any other mode of travel. For all modes of travel have factors of danger far more complicated than the simple matter of keeping an airplane in the air, greater chances for mechanical or human failure and greater chances for such dangers as collisions."

WHEN the New York, Rio & Buenos Aires Air line transport, Cuba, landed at Dinner Key, Miami, on February 26, it brought the first South American mail to the United States over the Great Eastern trade route. Time records between the U. S. and many South American cities were smashed by the flight. The plane flew from Rio de Janerio to Miami in five days, one hour and three minutes. Scheduled plane service was started by the company between Miami and Havana on March 2. The photo shows the Cuba with mail load on its deck.

Whitehead Now In Charge of Peruvian Airports

POSSIBILY by this time Private Charles B. Whitehead, motor instructor at the U. S. Army Air Corps Primary Flying School, Brooks Field, San Antonio, may be known as Captain Charles B. Whitehead, inspector of naval aeronautics, Peruvian army and navy.

The 27-year-old soldier was to sail some time in March from New Orleans for South America, armed with a contract with the Peruvian government. His contract, covering a period of two years, stipulates that he take charge of the maintenance and equipment of five flying fields with a base at San Ramon, Peru, 800 miles from Lima.

Whitehead's connection with the Peruvian government was brought about through an acquaintance he struck up last year with Sergeant Nalli of the Peruvian army, who was then a foreign student officer in training at Brooks Field. Although not completing the course at Brooks Field, Sgt. Nalli returned to Peru and was commissioned a second lieutenant in the Peruvian army, later being sent to the Parks Air College, St. Louis, Mo. where he now is taking the transport pilot's course.

Whitehead said the army and navy air corps of Peru is consolidated and has a force of some 6,000 men, although only five years in existence. He further declared that by accepting the contract with the South American government he will not lose his American citizenship and may return at the expiration of two years.

Those who have had occasion to observe his work at Brooks Field readily declare he is a most able mechanic. After 18 months study at Georgia Tech, he completed a course in the army technical school at Chanute Field, Rantou, Ill. Not contented to remain idle during his spare time he later studied a correspondence course in maintenance engineering.

Whitehead enlisted in the U. S. Army Air Corps at Houston, June 27, 1928. He is a reserve officer.

Guggenheim Award Goes to Georgia Tech

The Georgia School of Technology, Atlanta, Ga., has been definitely chosen to receive the $300,000 Guggenheim award for the founding of a school of aeronautical engineering.

The selection of a southern school for the establishment of an aeronautical engineering department had been pending for some time prior to the announcement. The selection of the Georgia School of Technology was the final act of the Guggenheim Foundation before ceasing to function as a Fund. The Georgia school was selected from a field of twenty-seven competing southern colleges.

Georgia Tech is the seventh school in the United States to receive funds from the Guggenheim Foundation for establishment of aeronautical courses.

New Curtiss-Wright Unit in Miami

WITH the completion of the new Curtiss-Wright Flying Service hangar and administration building at the municipal airport, Miami, what is said to be the only complete airplane service in the state of Florida is available. This new building marks an almost 100% increase in business in a little more than a year's time since the company began operations at the airport by leasing a hangar of the city of Miami.

While there are many other companies offering airplane service in Florida, the Curtiss-Wright Flying Service is unique in that it covers every possible phase of service—sales, repairs, photography, aerial mapping, crop-dusting, mosquito spraying, fire patrol, charter service, sight-seeing trips and school for pilots. The service offered by many of the other organizations, running as it does on a regular schedule and along specific lines, might be compared to that of a railroad where everything is operated on a definite schedue. The Curtiss-Wright Flying Service is operated more like a taxi service where transportation can be given anyone at any time to any point.

The most important unit of the Miami organization is the school for pilots. The second floor of the administration building at the hangar has been turned over to the school. One-half of it contains desks and the model airplane used for practical work in rigging and building. In an adjoining room is housed a bank of six different motors, panel instrument boards and other devices. Ground instruction is given by a licensed graduate school instruction in the following subjects: theory of flight, aerial navigation, engines, structure and rigging, meteorology, air commerce regulations, navigation and other allied topics.

Another subject is taught by a licensed parachute instructor. The correct use of a parachute is given, also instruction in inspecting, repacking and repairing of standard parachutes.

At this school there are two flying instructors, both licensed transport pilots and both holding an approved school instructor's license.

As to flying equipment, the school has four types of airplanes. There are three Fledgling two-place training planes, two Curtiss OX Robin three-place closed cabin ships, one four-plane cabin ship monoplane and Cessna three and six place cabin ships.

A seaplane pilot's course is also offerred at the marine base of the Curtiss-Wright Flying Service. This course has been inaugurated to give instruction necessary for piloting flying boats. It has been predicted that practically every yacht club will soon have its air division composed of members who are air-minded, and will anchor their seaplanes and amphibians beside their yachts.

The sales division might be likened to an aviaton department store. Every possible need of the aviator from a completely equipped airplane to a piece of aeronautical jewelry, may be supplied here.

In the service department skilled mechanics are on duty night and day to repair or service a plane. They offer the same over-night service that a modern garage gives the owner of an automobile. The plane is brought in and cleaned, washed, polished, greased, inspected and made ready for use the following day.

The department of photography is prepared to make anything from oblique snap shots of a winter residence to a complete aerial map of the state of Florida. Charges are made on the basis of a flight cost, plus the photograph. Where a large amount of work is to be done, running into big sums of money, it is done on a contract basis, a cotract being prepared as for any other job. Other orders are taken on a piecework basis.

The sightseeing flights offered by the Curtiss-Wright Flying Service are popular. The base from which the flights are made is well located and easy of access from the heart of the city. Short flights over Miami, Miami Beach, Bay of Biscayne and surrounding territory are given at a very nominal figure. Through the charter department transportation may be arranged for any part of the United States, the West Indies, Panama, or South America.

The Curtiss-Wright Flying Service maintains three offices in Miami. The main down-town office is in the Everglades Hotel; the seaplane base in the Marine Department is at 829 Biscayne Boulevard; and the hangar, administration building, school and shops are at the municipal airport.

The new hangar represents an investment of $75,000. It is of Moorish design, an adaptation to suit local climatic conditions of a hangar originally designed by Charles Bartlett, architect of New York. On the west side is a two-story building, the ground floor of which is used by the shops and parts department. The second floor is given over to the ground school of the flying instruction courses. On the opposite side of the hangar is the administration building, one story high with a broad balcony over the roof for an observation platform.

The Curtiss-Wright Flying Service began operations in Miami less than eighteen months ago, with one ship for passenger charter trips. With the completion of this hangar their investment to date in this locality is approximately $750,000. L. W. Botts, vice-president of the Curtiss-Wright Flying Service of Florida, is general manager of the land operations of the Miami base, and Capt. Harry Rogers is in charge of the marine base and the seaplanes. W. V. O'Brien is in charge of the school for pilots.

New Curtiss-Wright hangar and Administration building at Miami

Curtiss-Wright Base at Candler Field

A NEW link was added to the Curtiss-Wright chain of Flying Services March 10 when the hangar at Candler Field vacated by Eastern Air Transport was taken over by the Curtiss-Wright Corporation.

The varied aerial services offered by other Curtiss-Wright branches will be available at the Candler Field branch. Tne flying and ground school conforming to the usual high standards maintained by Curtiss will be operated, as well as a modern shop with complete mechanical equipment. Photography, passenger flights, taxi service, storage, crop dusting and charter service, will also be available.

Sales and service of all Curtiss-Wright products will be available. The managers, Messrs. Joseph and Hubert Duckworth, are native Atlantans. The former is a graduate of the Army Air Corps Training School and the latter is a graduate of the Curtiss-Wright Flying School. Both are licensed instructors.

The ground and flying school will be featured as the principal division of the local branch's operations. The army course of instruction will be paralleled as nearly as possible.

School Girls Use Plane for Week-End Trips

Using an airplane for a week-end air trip home, students of Ward-Belmont school in Nashville, Tenn., recently motored to Tennessee's Sky Harbor, Nashville air terminal, and there were met by Pilot Beeler Blevins and Asa G. Candler, Jr., of Atlanta, Ga., owner of a new Lockheed Vega monoplane, and flew the 200-mile hop in little more than an hour to Candler Field, Atlanta.

Two of the girls, Helen and Martha Candler, daughters of Asa Candler, were among the Ward-Belmont girls making the air journey. The new Lockheed was purchased shortly after a similar plane was destroyed by fire when the Beeler Blevins hangar at Candler field burned a few weeks ago.

Left to right the photo shows Pilot Blevens, Helen Candler, Sarah Burgin of Buena Vista, Ga., Martha Candler, Margaret Hays of El Dorado, Ark., Jane Fowler of Colorado Springs, Colo., and Asa Candler. All the girls are students at Ward-Belmont.

School for Mechanics at Baltimore

The Curtiss-Wright Flying Service, 1209-15 North Charles street, Baltimore, Md., has opened a new and advanced course in airplane mechanics. The Curtiss-Wright school has been preparing and outlining the new course for more than three months, and has installed several thousand dollars' worth of new equipment for the course. It is a six-month course, with classes three nights a week, and it is open to students on the new "pay-as-you-learn" plan which the Curtiss service has inaugurated.

The course embraces careful training in aircraft welding, metal, wood and fabric work, doping and finishing. In fact, every operation included in the manufacture of aircraft will be taught. Qualified students will actually construct component parts of aircraft and assemble complete airplanes. In the engine section of the course, instruction is given in motor overhaul, instrument and accessory repair. All of the typical types of modern aircraft engines will be used. The course is designed to fit mechanics for positions in airplane factories.

Beeler Blevins, left, and Asa Candler, Jr., right, with a group of college students ready for a week end trip in the Lockheed

Survey Shows Tuition Cost for Pilot's License

Replies to a questionnaire, sent out by the Department of Commerce to collect authoritative data on the cost of the various flying courses, designed to fit students for a Department of Commerce license, show that the average cost of instruction for a private pilot's course is $565, for a limited commercial $1,255, and for a transport license $4,304.

The average length of time required for the private pilot's license was found to be eight and one-half weeks; for the limited commercial, the average minimum time required was two and four-fifths months, and the average maximum time four and three-fifths months; for the transport license the average minimum time required was seven months and the average maximum time eleven and three-fifths months.

The tuition charges given above do not include board, which amounts to approximately $12.00 per week. Part-time instruction and plans of students to work their way through were generally discouraged by school officials replying to the questionnaire. Prospective students are also urged not to undertake a course unless they have money enough to complete it. None of the schools agreed to furnish employment for their graduates. The question of salary expected after the student finished the course was regarded as being beyond the scope of the school.

Farman to Build Aircraft at Americus, Ga.

The proposed establishment of an airplane factory at Americus, Georgia, on the site of Souther Field was recently announced by the Farman Aircraft Company.

The Farman Company is one of the world's largest manufacturers of airplanes, with reported resources of over $10,000,000. Orders for over one million dollars worth of planes have already been booked by the company and it is expected that the company will begin operations in the new plant within a few months. Large transport planes will constitute the major portion of the company's immediate output, it is believed, although they have been large producers of military craft in the past.

The field was purchased from the Federal Government one year ago by the commissioners of Sumpter County. It is reported that a number of prominent Georgia capitalists are interested in the Farman Company.

Curtiss-Wright Building Factory in Chile

A BRANCH factory for the construction of commercial and military airplanes is to be established at Santiago de Chile by the Curtiss-Wright Corporation.

Shipment of materials for the new factory has already started. When completed it will have a production capacity of fifty airplanes a year, althougn facilities for increased production are said to be unlimited. Three buildings will comprise the new factory unit—a steel and concrete manufacturing plant, a hangar of similar construction, and an office building.

The Curtiss-Wright factory will be the first airplane construction plant in Chile, which has one of the best equipped military establishments in South America.

Under agreements between the Export Corporation, Commandante Merino, and General Blanche, Minister of War for Chile, a group of twenty-five picked Chilean workmen will come immediately to the United States for a period of training at the Curtiss-Wright plant in Buffalo. At the end of a year, they will return to their native land and take over important tasks in the administration and operation of the factory.

Fifteen department heads, engineers and foreman of the Buffalo plant will go to Santiago under the direction of Captain S. C. Coon, and open the factory and undertake the training of native workmen. Captain Coon has been appointed resident manager of the plant and will employ as far as possible local mechanics and workmen after they have completed their training under the experts from America.

Sky Harbor Employes Form Flying Club

Organizing what is believed to be the only club of its kind in that section of the country, 10 employes of Tennessee's Sky Harbor, headquarters for Interstate Airlines, Inc., near Nashville, recently took their first training flights in planes of the Sky Harbor Flying School, under instruction of Chief Pilot "Gene" Fricks and Pilot Larry Harris.

The club was organized by H. S. Tiffany, business administrator of the Sky Harbor school, who is also a pilot. C. F. Bradley, assistant treasurer of Interstate Airlines, was the club's charter member, and took the first training flight with Pilot Harris. Another member of the club is Mrs. W. G. Schauffler, Jr., wife of Colonel Schauffler, vice-president and general manager of Interstate Airlines, Inc.

Members of the Employes Flying Club at Sky Harbor, Tennessee

Left to right the proup includes George Zoller, A. W. Van Sickle, Eugene Fricks, Jr., son of the chief pilot; Mr. Bradley, wearing the dark hat; Harvey Hull (standing back of Bradley); J. M. Wulpi, Mrs. Schauffler (in rear cockpit of plane); Mrs. O. S. Hunt, O. B. Lance and Pilot Harris (in front cockpit.)

A special transport course has been added to the other flying courses at the Parks Air College. The new course sells for $3,795, and does not include training on a tri-motored Ford. The regular transport course sells for $4,550, and includes tri-motored time.

New Regulation Prohibits Towing of Gliders

An amendment to the Air Traffic rules of the Aeronautic Branch of the Department of Commerce prohibiting the towing of gliders by other aircraft was made known recently by Major Clarence M. Young, Assistant Secretary of Commerce for Aeronautics.

The rule reads: "The towing of aircraft by other aircraft is prohibited except by special permission of the Secretary of Commerce."

"The amendment," Mr. Young said, "is aimed specifically at the present practice of airplanes towing gliders, either for the purpose of launching them into the air after which they are released or for the purpose of conveying them through the air by means of a connecting line.

"In the past two months, two deaths have resulted to pilots of gliders which may directly or indirectly be attributed to being towed by airplanes. The hazard of this practice lies in the fact that gliders have not been designed to withstand the strain to which they are subjected under these conditions, as this is not the fundamental purpose of their existence. They cannot be expected to live up to the performance of engine-powered aircraft."

The amendment is now a part of the air traffic rules, and will be enforced by the inspectors of the Department of Commerce.

New Training Course for "Business Men Only"

The Baltimore branch of the Curtiss-Wright Flying Service inaugurated on March 4th a training course for "business men only" which it is believed is the first school of its kind in the country. Working in conjunction with the Baltimore Association of Commerce, Major William D. Tipton manager of the service, said a course had been outlined "to familiarize the average business man with the fields of aviation."

The course planned will consist of eight lectures and five demonstration flights, which it is believed will forward the knowledge of business men of aviation. It is not planned to teach them to fly but to give business men an idea of what flying really is. The lectures will be in the form of a luncheon, to be held each Wednesday, at the Emerson Hotel. The lecture course will include: Theory of flight; the airplane and its uses; safety regulations for flying; importance of proper training; meteorology and its importance; navigation and navigation instruments; airports and Federal control; air transportation, past and future. The flying course will consist of five demonstration flights, in which the business-men "students" will not be allowed to touch the controls. These demonstrations include: Theory of flight; aerial navigation; flying above and below clouds; night flight and cross-country flight.

News of The Air Corps Training Center

San Antonio, Texas— The group of Air Corps units which will be concentrated during April at Mather Field, Sacramento, Calif., and which will participate in the Air Corps Field exercises, has been designated as the Provisional Wing by Gen. James E. Fechet, Chief of the Air Corps.

The Provisional Wing will be commanded by Brig. General William E. Gillmore, the present Chief of the Training and Operations division of the Air Corps at Washington. General Gillmore has organized the following staff for these exercises:

Executive officer, Lieut. Col. Frank M. Andrews; A. C. Assistant for Personnel, Maj. Micnael F. Davis; A. C. Assistants for Military Intelligence, Maj. T. DeWitt Milling, Lieut. Guy Kirksey, Lieut. Roland Birnn; Assistants for Operations and Training; Maj. Willis H. Hale, Capt Harold M. McClelland, Capt. Frank O'D. Hunter; Assistants for Supply, Maj. H. H. Arnold and Capt. Elmer E. Adler.

A wing in the Air Corps organization is composed of two or more groups which, in turn, consist of two or more squadrons each. There are from 12 to 27 planes in a squadron, depending on whether it is pursuit attack, bombardment or attack.

War Department orders have been received relieving Major Frederick L. Martin, A. C., from duty at the office of the Chief of Air Corps, effective about August 1, 1930, and he will report to Kelly Field, Texas, as commandant of the Air Corps Advanced Flying School, relieving Major J. E. Chaney, the present commandant of the school, who is scheduled for transfer to the War College in Washington. Major Martin will be remembered as flight commander of the round-the-world flight in 1924. Major Chaney will have completed four years with the training center, one year at Brooks Field, and three years at Kelly Field.

Ninety-five students received their wings on February 27, that being the official date of the graduation of the class at the Advanced school at Kelly Field. The list includes cadets who were given reserve commissions on February 17 and recalled to active duty for two weeks. The class consisted of 81 flying cadets and 14 student officers. Applications have been received from the graduate officers for transfer to the Air Corps from the several branches they were members of prior to starting flying training.

We have been informed that experimentation with Diesel motors for airplanes has been undertaken by the Air Corps. If perfected, it will be the nearest thing to an airplane motor we have to date.

The new class at Kelly got under way on the March 1st when 50 students reported from Brooks Field and 48 students enroute from March Field. The class should be around 100 strong by the time training begins. At March Field 71 students were advanced to the basic stage or the last four months of their primary training and at Brooks Field 67 students completed primary stage and advanced to basic training.

War Department orders have been received transferring Major M. F. Harmon, A. C., commandant of March Field, to Fort Lavenworth, Kansas, for a course of instruction at the Tactical School. Major J. T. McNarney, at present on duty with the War College at Washington, has been designated commandant of the Primary Flying School relieving Major Harmon.

A glider club with twelve charter members has been formed at Bartelsville, Oklahoma. It was organized by E. M. Andrews, a Bartelsville aviator, and its membership consists mostly of fliers. A glider has been ordered from the Wichita factory.

During 1929 the Aeronautics Branch of the Department of Commerce dealt with 523 violations of the air commerce regulations and traffic rules. Fines were assessed for 179 of these violations, the amount collected being $4,755. 163 pilots were reprimanded, 110 licenses were suspended and 16 licenses were revoked altogether.

New Aeronautical Course at University of Alabama

A new four-year course in aeronautical engineering has been established at the University of Alabama with an initial enrollment of 55 students. The teaching staff is composed of four men, headed by Dr. George Davis, dean of the college of engineering.

Ten Major Parts Made by Aircraft Products

The recent addition of the Ski-wheel to the line of aircraft accessories manufactured by the Aircraft Products Corporation of Detroit, brought the number of major airplane parts now manufactured by that company up to ten.

This company has grown to a position among the leaders in accessory manufacture, providing the industry with skis, pontoons, gasoline tanks, oil cooler tanks, wheels, brakes, tail-wheel assemblies, retractable landing gears, and their most recent development, the Skiwheel. The company was one of the major parts exhibitors at the Detroit Aircraft Show.

The Ski-wheel recently introduced by the company was developed in actual service in Canada and presents a new and interesting compromise in landing gear for use under various conditions. The ski is standard in design except for a slot through which the wheel is extended for landing on clear ground. When the ski is in position for landing the wheel rests in a special socket on top of the ski. This preserves the flexibility of the inflated tire for absorbing initial shock in landing.

Great Lakes Cuts Price On Trainer

During the St. Louis Aircraft Exposition the Great Lakes Aircraft Corporation at Cleveland, through its president, Col. Benjamin F. Castle, announced a reduction in price of the Great Lakes Trainer from $4.990 to $3,150.

In announcnig the reduction, Col. Castle declared that the aircraft industry is now out of the "sellers market" and in the "buyers market" and that it was his belief that manufacturers must give more and better airplanes for less money. Col. Castle states that there will be no sacrifice of quality in this plane, but that lower prices and increased sales will permit constant improvement and a better quality product.

The improved 1930 model includes many refinements based on studies made in 1929, Col. Castle stated.

A radio course has been added to the Pilot's Ground School Curriculum of Parks Air College. The new course will consist of 20 lectures and approximately 20 hours of code practice. Graduates will be required to send and receive ten words per minute as well as passing a theoretical examination.

First Cross-Country Flight In Plane-Towed Glider

AFTER traversing a 2,800-mile trans-continental course in eight days, Captain Frank Hawks released his cabin glider, "Eaglet," from the towing plane over Van Cortlandt Park, New York City, April 6, and settled to earth, completing one of the most unique flights in aviation history and one that carried a popular interest rivaling that of the trans-Atlantic flights of several years ago.

The "air train" took off from San Diego on March 30. The "Eaglet," with Captain Hawks aboard left the landing field 500 feet behind the Texaco No. 7, a Waco biplane powered by a Wright J-5 engine and piloted by J. D. ("Duke") Jernigin, Jr. The first stop was made at Yuma, Arizona, after crossing the mountain and covering a distance of 150 miles, where the Waco was gassed. After circling the Yuma airport in tow, the air train proceeded to Fly Field, and at an altitude of 1,500 feet the "Eaglet" was released from the tow line and glided to earth.

This procedure was repeated at each of the airports at the sixty cities aong the route.

The "Eaglet" is unique among gliders in many respects. It is the first cabin glider ever built and the first to be equipped with an instrument board. It was built for the Texas Company, who sponsored Captain Hawks' flight to stimulate interest in gliding and flying in general, by Professor R. E. Franklin, of the University of Michigan, and his brother, Wallace, who was the "air train's" only passenger, flying in the Waco towing plane.

In flight Captain Hawks communicated at will with Jernigin over a telephone installed by the Western Electric Company. By means of a line supported by a tow cable he was able to hold the first conversation ever conducted over a wire between aircraft in flight. Plugs at the end of the telephone line and jacks in the tail of the plane and in the nose of the "Eaglet" permitted release of the telephone line by either craft along with the tow cable. Current was supplied by dry cells carried in the plane.

A specially built three-tube receiving set with small batteries was carried in the "Eaglet" and provided Captain Hawks with entertainment while aloft. While enjoying the music from nearby broadcasting stations, he was at the same time able to hear Jernigin's voice in the headpiece or talk to the tow pilot without cutting off the radio. Ten pounds

Captain Hawks, in the Eaglet, talks to pilot of the tow-plane

of mail was carried aboard for the benefit of stamp collectors.

The glider is of monoplane type with a wing spread of fifty feet and length of twenty-one feet. Empty, it weighs 300 pounds but witn Captain Hawks and his equipment aboard weighed upward of 500 pounds. It is especially stressed for airplane towing. The triangular, fabric-covered fuselage is of tube steel, as are the struts. Its wing is of wood. It is painted with the Texaco colors and bears the registration mark 502-M.

Fully loaded the "Eaglet" has a stalling speed of about 15 miles an hour. The gliding ratio is 22 to one, which means that from a thousand feet, it can glide a distance of 22,000 feet. On the nose is a combined release for the tow cable and shock cord, catch, the latter being used only in launching from the ground with an elastic rope. The cockpit may be covered by a pyrex-windowed hood, which covers the pilot after he is seated at the controls and allows full protection from weather as well as lending more effective stream-lining.

On the instrument board is an air speed indicator, an altimeter and bank indicator. The "Eaglet's" combination skid and brake-equipped wheel constitute the only landing gear of its kind.

Mid-South Aircraft Show Planned for September

Entry of the first plane in the Mid-South Aircraft Show, to be held next September at Little Rock, has been made by E. R. Lambert, of Pine Bluff. It is a Laird biplane, powered with a Wright 225 h. p. motor.

The show committee, under Arthur Halle, is planning to make the show one of the largest ever held in the South. The Memphis Chamber of Commerce is cooperating with the committee in formulating the plans for the show.

Many Pay-As-You-Fly Schools Being Established

A net-work of Pay-As-You-Fly schools is being established over the Middle-West by the Porterfield aviation interests. H. S. Jack Lowe, formerly a regional sales manager for American Eagle, has been promoted to general sales manager for the Porterfield interests, and he will have charge of this new development. Pay-As-You-Fly schools have already been established at Carthage, Missouri, and Atchison and Coffeeville, Kansas.

Captain Hawks taking off in the Eaglet

Latest Developments in AIRPLANES AND ACCESSORIES

Miami Begins Airplane Manufacturing

By Harold M. Farkas

MOVING picture studios were never to be Miami's heritage. Air transportation lines were. Not long ago, Joseph M. Smoot, former owner of the Miami Jockey Club, was persuaded to take a ride in a flying boat. After the ride he became enthusiastic about aviation and made inquiries about the company which made the flying boat. He learned that the company was in Miami and that it was almost out of existence as far as manufacture was concerned. Only the sturdy flying boat, "Miami Maid," remained to show what had been done. He also discovered that the manufacturing plant of the Miami Maid had been converted from a moving picture studio.

Mr. Smoot began to reorganize the airplane company which is now known as the Miami Aircraft Corporation. He had many wealthy, influential friends who had foresight enough to see the possibilities of an airplane factory in Miami. Aviation is going over big in South Florida. Miami is the terminal for such companies as the Pan-American Airways, Inc., the New York-Rio-Buenos Aires Lines and the Goodyear Zeppelin Corporation. Why shouldn't there be airplane factories? Smoot formed a board of directors. He called the engineers of the Miami Maid together, and he told them to go ahead and produce. Thus started the first airplane manufacturing company in South Florida.

Hundreds of flying hours under all weather conditions have proven the dependability of the Miami Maid four-passenger monoplane flying boat. The sturdy, deep V hull of this ship is constructed of ash longerons and spruce framing. The bottom frames spaced eight inches apart, with extreme margins of strength provided at all points which are likely to be highly stressed when landing and taking off in rough, open water, provide seaworthiness and a sense of security.

The shell of Alclad Duralumin is bolted, screwed and riveted to the framework. Betwen the sheets at all points are strips of fabric, impregnated with marine glue, providing a thoroughly water-tight joint.

Five water-tight bulkheads are provided with hand holes opening into each compartment . A large, roomy locker in the nose of the hull serves for anchor and tool storage.

A Miami Maid taking off from Biscayne Bay

The power plant mounted on top of the wing, driving a standard two-blade steel pusher propeller, is completely isolated from the remainder of the structure. An electric inertia starter and primer controlled from the pilot's seat makes starting simple and easy.

The cantilever type of wing construction was chosen as a result of long engineering research and experience as a logical type from the standpoint of efficiency, seaworthiness and structural reliability. Structural simplicity with a single, continuous wing beam allows the cantilever construction complete freedom from the hazard of maintaining pins, bolts, fittings, wires and struts. The leading edge is reinforced with birch, plywood, maintaining contour of entering edge of wing. The wing is wired and furnisned with navigation lights.

Two front seats of the Miami Maid have dual control. A complete set of flying instruments are neatly and conveniently arranged on an illuminated dashboard, easily visible from all seats of the cabin. The front of the cabin is constructed with clear view non-shatterable glass and sliding windows alongside all seats, and gives excellent visibility in all directions.

The building which houses Miami's airplane industry is 250 feet. Included on tne ground floor are the

Embryo Miami Maids in the hull department of the Miami factory

wood working sheet metal, sand blasting, hull, wing and motor departments; the general assembly shop, paint shop and stock rooms. On the second floor are the administrative offices which include sales, inspection, test and engineering departments. Executive offices of the Miami Aircraft Corporation are in the Ingram Building, Miami. The operating base is off the Venetian Causeway on the Municipal Seaplane Base.

Specifications

Type: 5-place cabin flying boat, monoplane.

Dimensions: Length overall, 33 ft. Height overall, 10 ft. 6 in. Wing span, 44 ft. Wing chord, 87.5 in.

Areas: Wings (including ailerons), 322 sq. ft. Ailerons, 26 sq. ft. Rudder, 14.75 sq. ft. Fin, 15.25 sq. ft. Stabilizer, 35.8 sq. ft. Elevator, 32 sq. ft.

Power Plant: Wright Whirlwind. Rated 300 h. p. at 2000 r. p. m.

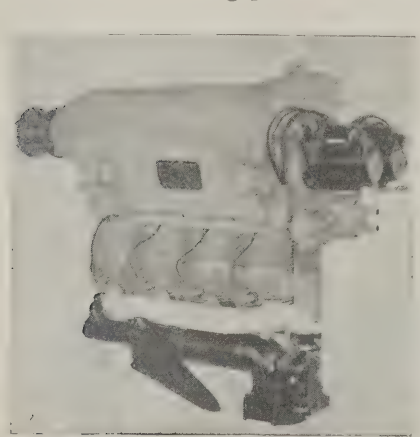
Weignts: Empty, 2,540 lbs. Useful load, 1,201 lbs. Pay load, 650 lbs. Gross weight load, 3,100 lbs. Wing loading, 9.5 lbs. per sq. ft. Power loading, 11.5 lbs. per h. p.

Performance: High speed, 116 m. p. h. Landing speed, 57 m. p. h. Cruising speed, 95 m. p. h. Climb (at sea level), 880 ft. per min. Cruising range, 500 miles. Absolute ceiling, 18,000 ft.

Construction: Hull, Alclad Dural covered. Five water-tight compartments. Wings, spruce and mahogany; spars of box section with a plywood web; mahogany ribs reinforced and caped with spruce. McWhite tie rods for internal bracing, full cantilever, fabric covered.

Rover L-267 Designed For Light Planes

THE Rover L-267 is an inverted four cylinder in-line air-cooled engine, suitable for use in moderately priced light two-place airplanes for sport or training purposes, made



Rover Model L-267

by Michigan Aero-Engine Corporation.

The designer of the Rover took into consideration the many advantages of installation of this type of inverted air-cooled motor.

The enlarged model L-267 has recently been granted a second Approved Type Certificate, No. 37, with the new and higher rating of 75 h. p. at 1975 r. p. m.

This new engine has been developed as a complete unit and has been subjected to rigid tests both on the ground and in the air. Due to its shape and very low frontal area, it offers many possibilities for fast sporting single seaters as well as multi-engined wing installations.

Specifications of the model L-267 are as follows: Type 4-cylinder-in-line, inverted air-cooled 4-cycle. Bore, 4.125 ins. Stroke, 5.000 ins. Total piston displacement, 267.28 cu. in. Compression ratio, 5.1:1. Normal h. p. (Department of Commerce rating), 75 at 1975 r. p. m. Approved Type Certificate, Number 37. Direction of rotation, anti-clockwise. Propeller drive, direct. Fuel consumption, .55 to .58 lbs per h. p. hr. Oil consumption .010-.015 lbs. per h. p. Average weight dry, complete with propeller hub, exhaust system, carburetor air heater, cooling air scoop, and mounting lugs, 232 lbs. Shipping weight 370 lbs. Price $1,200, F. O. B. factory.

Test of Fourteen-Passenger Savoia-Marchetti

The first American-built, fourteen-passenger, Savoia-Marchetti, in test flights made recently, has shown a speed considered by experts as remarkable for a seaplane of its size. With a useful load of 3,000 lbs., the twin-hulled seaplane showed an indicated air speed of 144 miles per hour and a cruising speed of over 122 miles per hour, with throttle not fully opened.

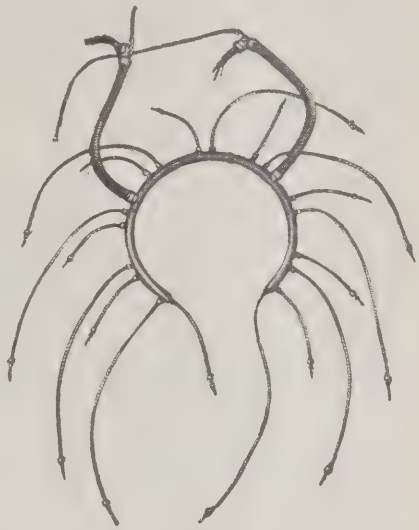
The ship is powered with two Isotta-Fraschini 500 h. p. motors, mounted in the center section of the wing. The motors are arranged in tandem.

Finishing touches were made on the ship recently in preparation for a flight to Buffalo, Cleveland and Detroit, where it was scheduled to be on the water during the Detroit Aircraft Show. The American Aeronautical Corporation, manufacturers of the seaplane, planned to send a three place Savoia-Marchetti amphibian to Detroit for exhibition.

The fourteen-passenger Savoia-Marchetti is the same type that made a tour of the middle west and western states last fall covering over 6,000 miles in the entire flight. At the present time it is being used extensively by the Italian navy as a bombing plane.

Breeze Brings Out Radio Ignition Shields

The Breeze Corporations, Inc., of New York, has designed a radio ignition shield which is said to eliminate interference in aircraft radio receivers due to the electro static



Breeze Radio Shielding

fields set up in wires, or any other circuit wherein an electrical spark occurs, such as magnetos, generators, control boxes, etc.

The Breeze shield may be divided into three parts: the main shielding, the auxiliary shielding, and the Breeze shielded spark plugs. The main shielding takes care of the entire ignition system from the magnetos up to the spark plugs. This includes the manifold ring, the housings for individual wires leading to the spark plugs, and the housing from the magneto to the manifold. The auxiliary shielding takes care of all ignition wires from the magneto to the booster magneto and switch. The Breeze radio shielded spark plugs can be furnished when required. The Breeze Corporation furnishes this shielding suitable for use with any type of shielded spark plug or shielding for spark plugs or unshielded spark plugs.

Buffum Company Enters Aeronautical Field

The Frank G. Buffman Manufacturing Company, Louisiana, Missouri, manufacturing machinists and toolsmiths, has established an aeronautical division to handle the line of aircraft products which the company expects to bring out during the year. The new division will be a separate unit which will have charge of all aeronautical development by the company.

New Tri-Motor Airliner Built by Stinson

THE new Stinson Airliner, powered with three Lycoming engines, has been announced by the Stinson Aircraft Corporation, Wayne, Michigan. The new plan is priced to sell at $23,900.

The plane was produced by the Stinson Corporation with safety as a primary requisite. The new Airliner is said to perform creditably with only two motors functioning. Stability is such that the ship can be flown with ease, using the rudder alone or the ailerons only.

Previous to the announcement the Airliner has been subjected to a year of intensive flight-testing under extreme conditions that would not likely be met in operation and the actual success of the Airliner under the most severe tests is one of the plane's greatest attractions, it is said.

The entire primary structure of the Airliner is of metal, while the plane is completely fabric covered. Metal cowling is used on the nacelles and the center engine compartment back to and under the pilots cockpit. The fuselage is completely welded of Air Corps specification chrome-molybdenum steel tubing, no brace-wiring being used.

All strength factors required by the Department of Commerce are exceeded in the Airliner, it is said, and in addition to the use of Air Corps specification material only throughout (subjected to additional tests for acceptance) all major parts have been proved by actual load tests. This includes extensive tests on the wing spars, ribs, fittings and sand-loading of the control surfaces.

Especially noticeable from an exterior viewpoint is the wide range of vision for both pilots and passengers. Entrance to the cabin may be made with ony one step from the ground. Large comfortable, double arm chairs are provided for passengers.

The pilot's cockpit contains two comfortable seats, adjustable fore and aft and up and down. Side-by-side dual wheel controls are used and operated through a chain and cable mechanism over ball-bearing, adjustable pulleys. Dual swing type rudder pedals are used with separate control foot-brake pads which are on the pilot's side only.

The stabilizer and the fin adjustment cranks are located at the top of the cockpit to be operated by the pilot without the necessity of crouching in his seat. To the left and below these is found the landing light adjustment handle which rotates the landing lights out of their horizontal position inside the wing to be set at any angle desired by the pilot. The switches for these and the navigation lights are mounted on a panel directly adjacent to the pilot's seat at his left hand.

The thrust line of the three Lycoming radial engines lies in the same horizontal plane. Provision is made for elimination of noise in the cabin from the engine exhaust. Each unit is removable by taking out four bolts and disconnecting the control and fuel lines and interchangeable oil tanks are mounted directly on the engine mounts. Each complete nacelle unit and installations are easily replaceable with the minimum amount of time as their position allows the ready use of the tackle or swing to lift the unit out after the four supporting bolts are removed.

A pressure fire-extinguisher with three separate lines, one leading to each engine compartment, is mounted in the center engine mount in front of the cockpit wall with the control handle extending into the cockpit readily accessible to the pilot. By this means all engine compartments can be flooded at any time from the cockpit. A hand fire extinguisher is located behind the pilot and is easily available for use by pilot or passengers.

Specifications of the Stinson airliner are as follows:

Type: 10-place, cabin, land monoplane.

Power Plant: 3 Lycoming aircraft engines rated at 210 h. p. at 2,000 r. p. m.

Approximate fuel consumption at cruising speed, 1750 r. p. m., each engine, 11 gals. per hr. Adjustable metal propellers. Electric hand and inertia starters. 25 amp. generator, standard equipment.

Weights: Gross weight fully loaded (including high flying equipment) 8,400 lbs. Weight empty, 5,400 lbs. Useful load, 3000 lbs. Pay load, 1,950 lbs.

Dimensions: Overall span, 60 ft. Overall heignt, 10 ft. 4 ins. Overall length, 38 ft. 10 ins. Wing chord, 105 ins. Wing area, 490 sq. ft.

Performance: (with normal full load) High speed at sea-level, 135 m. p. h. Landing speed at sea-level, 55 m. p. h. Cruising speed at sea-level, 118 m. p. h. Rate of climb at sea-level, 1,200 ft. first minute. Rate of climb at sea-level, from 1,200 ft., 900 f. p. m. High speed at sea-level, 108 m. p. h. Rate of climb, 500 f. p. m. Normal cruising range at sea-level, 520 miles.

Particulars: Side-by-side dual control. Pilot's seat adjustable fore and aft, up and down. Individual foot-controlled brakes. Large spring cushioned cabin chairs. Individual cabin windows (lowering type). Dome lights. Large baggage or mail compartment. Cockpit and cabin heaters. 360 degrees turning radius castor roller-pearing tail wheel.

Boeing Airplane Co. has developed a new landing light which gives forty-five per cent more illumination and draws only half the load required for the old equipment, it is claimed. The new lamp, slightly larger than the old one, but much thinner, retracts into a comparatively thin wing without projections for housing the rear of the lamp.

Boeing Airplane Co. has also ordered sets of the new type navigation lights for installatoin on wing tips of transport and mail planes. The old type was developed by the Army Air Corps.

The new Stinson tri-motored Airliner in flight

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Changes Announced in Bellanca Pacemaker

THE Bellanca Pacemaker is now available with Pratt and Whitney Wasp motor as well as the Wright Whirlwind nine. Some changes have been made in the ship in order to obtain greatest effectiveness out of the increased engine power.

The wing area has been enlarged to 309 square feet and the span increases from 46 ft. 4 in. to 48 ft. 8 in. The stabilizer has been made adjustable over a range of eignt degrees. With this exception the controls are the same as in Standard Pacemaker.

The interior arrangement of the cabin is the same as that in the Standard Pacemaker, providing seating space for six people, including pilots.

Specifications of the Bellanca "Pacemaker" 400 are as follows:

Model designation: Bellanca "Pacemaker'" 400.

Type: Cabin land monoplane.

Dimensions: Wing span, 48 ft. 8 in. Wing area, 309 sq. ft. Length overall, 27 ft. 10 in. Height, 8 ft. 11 in.

Weights: Empty, 2,550 lbs. Disposable load, 2,050 lbs. Pay load, 1,120 lbs. Gross weight, 4,600 lbs. Gasoline capacity, 115 gals. Oil capacity, 9 gals.

Construction: Fuselage, welded chrome molybdenum steel. Wings, solid spruce spars, spruce ribs, fabric covered. Tail surfaces, wood and steel, fabric covered. Landing gear, round chrome molybdenum steel tubing, faired with sheet metal. Cabin interior, upholstered to purchasers specifications.

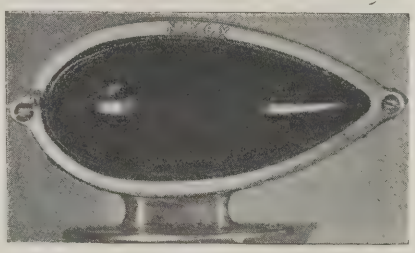
Power plant: Pratt and Whitney Wasp 425 h. p.

Performance with full load at sea level: High speed, 150 m. p. h. Cruising speed (full power) 130 m. p. n. Climb, 1,450 ft. per minute. Service ceiling 20,000 ft. Range at cruising speed, 5½ hours or 700 miles.

Equipment: Fuel system, gravity gasoline feed from two tanks in wings. Hand inertia starter. Oildraulic shock absorbers. Bendix brakes. Dual controls. Navigation, cabin, and instrument board lights. Clean air cabin heater with regulator and outside cut-off. Instruments include tachometer, oil pressure gauge, altimeter, magnetic compass, air speed indicator, bank and turn indicator, clock, and gasoline gauges.

New Pyle-National Lights Developed for Curtiss

Special requirements in navigation (running) lights have been met in the NAF-4 series developed by the Pyle-National Company of Chicago, for use on the full line of Curtiss-Wright planes. This type of



New Pyle-National avigation light

avigation light has a cast aluminum alloy body and base of minimum weight, designed for mounting directly upon wing or tail surfaces. The base is provided with mounting holes spaced according to the standard Army specifications. Wiring connections are brought to the lamp through the base.

Glass lenses are provided either in clear or the standard red and green colors.

New Standard Aircraft Corp., of Paterson, N. J. recently entered the ranks of military aircraft manufacturers when it was awarded an order from the U. S. Navy Department for approximately $50,000 worth of training planes and incidental spare parts, drawing and analytical data.

The New Standard training plane, known commercially as the D-29A, is now listed by the navy as the NT-1. It is an open cockpit biplane, with riveted open section duraluminum fuselage, and is powered with a Kinner K-5 engine.

The Wasp powered Bellanca Pacemaker

New Aeronautical Books

Elementary Laboratory Aerodynamics, published by the Ronald Press Company of New York, price 85c, has been prepared as an aid to high school instructors in teaching aerodynamics.

The experiments outlined may be performed in most high school physics laboratories without additional equipment, other than that usually found in a high school physics or mechanics laboratory. Thirty-one experiments in simple aerodynamics are contained in the manual.

"The Aviation Manual" edited by Lieutenant Commander John W. Iseman, U. S. N. R., published by Popular Science Publishing Company of New York, price $5.00, contains 24 chapters of approximately 700 pages.

Aviation in all its practical aspects is the subject of this manual. The authors have covered a large field completely, yet concisely. Planes, instruments, motors, training courses, schools, license requirements, design, flight theory and practice meteorology, air traffic, and aviation law, are some of the major subjects included in tne manual.

Aircraft Specialties Catalogue, third edition, has just been issued by the Lunkenheimer Company of Cincinnati, Ohio. In addition to the complete line of aircraft specialties shown in previous issues, the new catalog contains several new specialties including the aluminum strainer and a line of "aircraft type" primers.

"Airplane Mechanics Rigging Handbook," by R. S. Hartz and E. E. Hall, published by the Ronald Press Company of New York, price $3.50, is a manual of daily operating practice covering rigging, maintainence, inspection and repair of airplanes. The language is non-technical and the instructions given are in detail, showing how each operation should be done, in what order and why. In addition to information about rigging, trouble shooting, a mass of information about fabric, wood parts, metal fittings, wires and doping and dopes are included.

New American Eagle Plane Passes Flight Tests

Engineering data has been approved and the new American Eagle four-place cabin monoplane, powered with the Wright Whirlwind Five and Continental motors, has successfully passed flight tests for approval type certificates, E. E. Porterfield, Jr., president of the American Eagle Aircraft Corporation, announces.

The new monoplanes, designed by Stanley Wallace, chief of the Wallace division of American Eagle, cruise 106 to 109 miles an hour and have top speeds of 125 to 127 m. p. h.

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Kinner Introduces Model R-715

ENTRY of the Kinner Airplane and Motor Corporation into the higher power small engine field is marked by the introduction of the new Kinner 190 h. p., 5-cylinder, air-cooled radial airplane engine, designated as the model R-715.

The new model has a 715 cubic inch displacement, weighs 415 pounds, has an overall diameter of

The Kinner model R-715

50 inches, and an overall length, without starter or generator, of less than 35 inches. Practically the same arrangement of parts as in the smaller model engine is followed. It has the same simplicity, smoothness of operation and excellent forward visibility. It has less weight in proportion to its power than the smaller model, and has added advantages of having provision for standard starters, electric generator and fuel pump.

Planes which will be able to utilize the Kinner model R-715 engine will be many of the larger sport, advaced training and four and five-passenger cabin types. This engine was shown at the St. Louis Show where it attracted a great deal of attention.

There are only five cylinders.

The induction system is without superchargers or rotary induction and accessories are driven by simple spur gears. "Plumbing" is held to a minimum. Plain bearings are used throughout except for the deep groove type ball thrust bearing.

Smoothness of operation is attained by a specially developed presision method of balancing, by uniform power because of precision manufacture and by excellent carburetion.

Provision has been made for the use of standard starters, as Eclipse hand turning gear, inertia, hand, electric or combination starters, or standard aircraft electric starters. The provision of standard drive for electric generator affords the use of electric type starters, lighting system, radio, etc. Provision of fuel pump drives permits considerable latitude in location of fuel tanks. If preferred the simple gravity fuel system can be used due to the carburetor location.

Specifications for Kinner 190 h. p. engine: Model, R-715. Rated horsepower, not less than 190. Rated r. p. m., 1800. Type of engine, air-cooled fixed radial. Number of cylinders, 5. Bore, 5 5-8 inches. Stroke, 5 3-4 incnes. Displacement of engine, 715 cubic inches. Compression ratio, 5.3 to 1. Ignition, two Scintilla magnetos. Carburetor, Stromberg. Crankshaft propeller end, No. 30 S. A. E. Standard. Engine weight dry, without hub, carburetor air heater, exhaust colector ring, starter, generator, fuel pump not to exceed 415. Weight of exhaust system, including air heater, 40 pounds. Fuel consumption at 190 h. p. 0.60 pounds per h. p. maximum. Oil consumption, 0.020 pounds per h. p. hr. maximum.

New Aeronca Sport Plane on Demonstration Tour

Occupying the spotlight at the Kansas City Airport recently was tne little Aeronca Sport plane, which was on a demonstration tour. All qualified pilots were invited to fly it, and the general concensus of opinion seemed to be that it was precisely the type of plane needed to meet the demand of the average man who does not care to undergo the training necessary to become a skilled pilot. It was demonstrated to carry either one or two passengers. At the recent Aircraft Show in St. Louis it attraced much notice, both on account of its adaptapility and its attractive price. It sells for $1,885, Cincinnati, Ohio, and is powered with an air cooled, two cylinder opposed motor. This plane is manufactured by the Aeronautical Corporation of America. The Nicholas-Beazley Aircraft Corporation of Marshall, Missouri, are reported to have acquired the distribution rights for the state of Missouri.

An electric tachometer has been announced by the General Electric Company. It operates on the principle of generated frequency of a small magneto type generator. The tachometer generator is a simple inductor type having no brushes, commutator or slip rings. An indicating instrument and a special type of transformer are used, which together with the necessary wiring to complete the circuit, constitutes the installation. Total weight of the instrument is three pounds.

Alexander Whips Flat Spin in Bullet Development

By Y. D. Simpkins

HAZARDS and long labors at research in developing a new type airplane are essentials that have to be considered by a manufacturer in bringing out a ship that does not conform to the general lines of those already produced. This is brought forcefully to mind by news from Washington that the Alexander Aircraft Company, Colorado Springs, Colorado, has just successfully put its Bullet cabin monoplane through final government spin tests to win its Approved Type Certificate.

The Alexander Aircraft Company has been developing the Bullet for over a year. At the time that word concerning it began to be passed around in tne industry last spring, low wing cabin monoplanes were as yet undeveloped in this country. They possessed sufficient capabilities, however, to make the Alexander company feel justified in putting them into production. The Bullet's phenomenal speed and large carrying capacity behind a motor of relatively small horse power have justified the company's pioneering effort.

The Alexander Bullet was to be placed in production and offered on the market last summer. Late in its development, however, it revealed flat spin characteristics. In working out the ship's tendency to flat spin the company lost two pilots and four planes which fell out of control. It was while conducting spin tests that Errett Williams, South Carolina pilot and J. Shelly Charles, Virginia, made parachute jumps which qualified them for membership in the catapillar club. They were flat spinning Bullets when they made their leaps; there has never been a structural failure of this ship as stated in the February issue of SOUTHERN AVIATION.

The Bullet as now being prepared for production and as tested in Washington will not flat spin. Better still, it cannot be held in any kind of a spin. To ascertain if the retractable landing gear had any great effect on spinning characteristics, tests were conducted with the landing gear faired, gear down but with no fairing and with landing gear retracted.

In whipping the flat spin Alexander engineers lengthened the fuselage, made the capin more roomy and comfortable, changed the tail surfaces and used a different high lift air foil for the wing.

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Charles H. Day,
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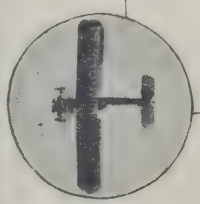

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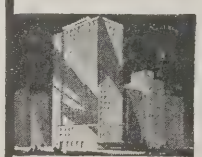

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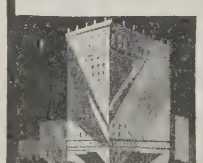

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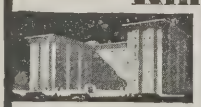

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Advertisers' Index

A
Aero Supply Mfg. Co., Inc. ..... *
American Aeronautical Corp. ..... *
American Eagle Aircraft Corp. ..... *
American Propeller Co. ..... *
B
Bowman & Company ..... *
Braley School of Flying ..... *
Brunner-Winkle Aircraft Corp. ..... *
C
Carolina Metal Culvert Co., Inc. ..... *
Cessna Aircraft Co. ..... *
Consolidated Instrument Co. ..... *
Crouse-Hinds Company 2
Curtiss-Robertson Airplane Mfg. Co. 6
Curtiss-Wright Flying Service 3
Curtiss-Wright Sales Corp. ..... 4 and 6
D
Detroit Aircraft Corp. 1
E
Eastern Aircraft Supply Co. 55
G
Gilmore Oil Co. .....Inside Back Cover
Great Lakes Aircraft Corp. 51
H
Harrison-Wright Co. 53
Harry Bros. Co., of La. ..... *
Heiss Hotel System 56
Hotel Tuller 55
I
Ingalls Iron Works Co. 53
International Airports Corp. 53
L
Logan Aviation Co. 56
M
Miami Air College 55
Miami Airplane & Supply Corp. ..... *
Morrison Hotel 56
Moth Aircraft Corp. 6
N
New Standard Aircraft Corp. ..... *
P
Packard Motor Car Co. .....Inside Front Cover
Parks Air College 1
Parks Aircraft Corp. ..... *
R
Rich Associates, G. Gifford 55
Ronald Press Co. ..... *
Russell Manufacturing Co. ..... *
Ryan Aircraft Corp. ..... *
S
Service Steel Company 53
Southern Air Transport Co. ..... *
Spartan School of Aeronautics 53
Stanavo Specification Board, Inc. .....Back Cover
T
Titanine, Inc. 55
Travel Air Co. ..... *

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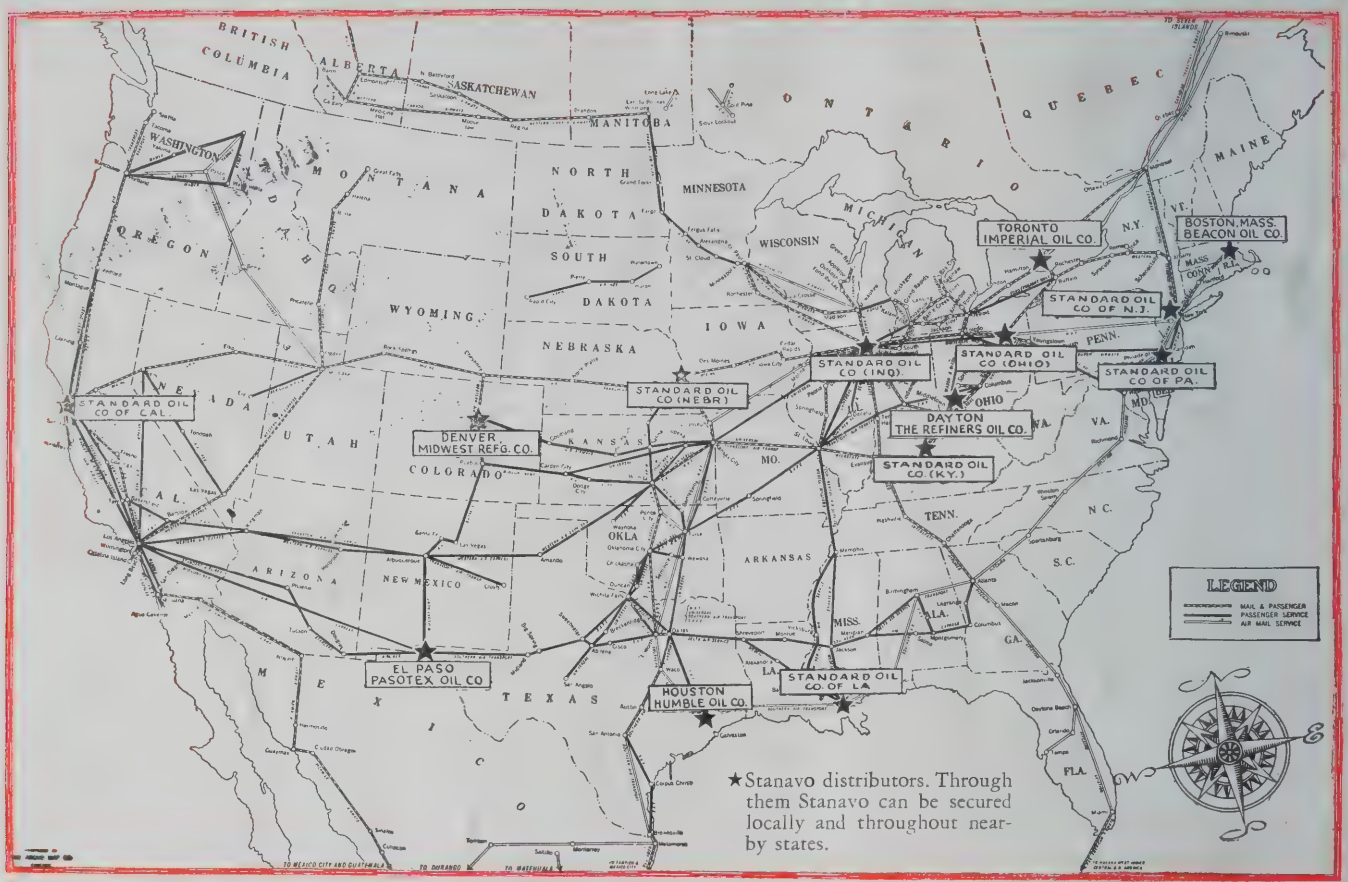

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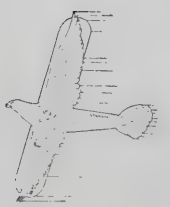

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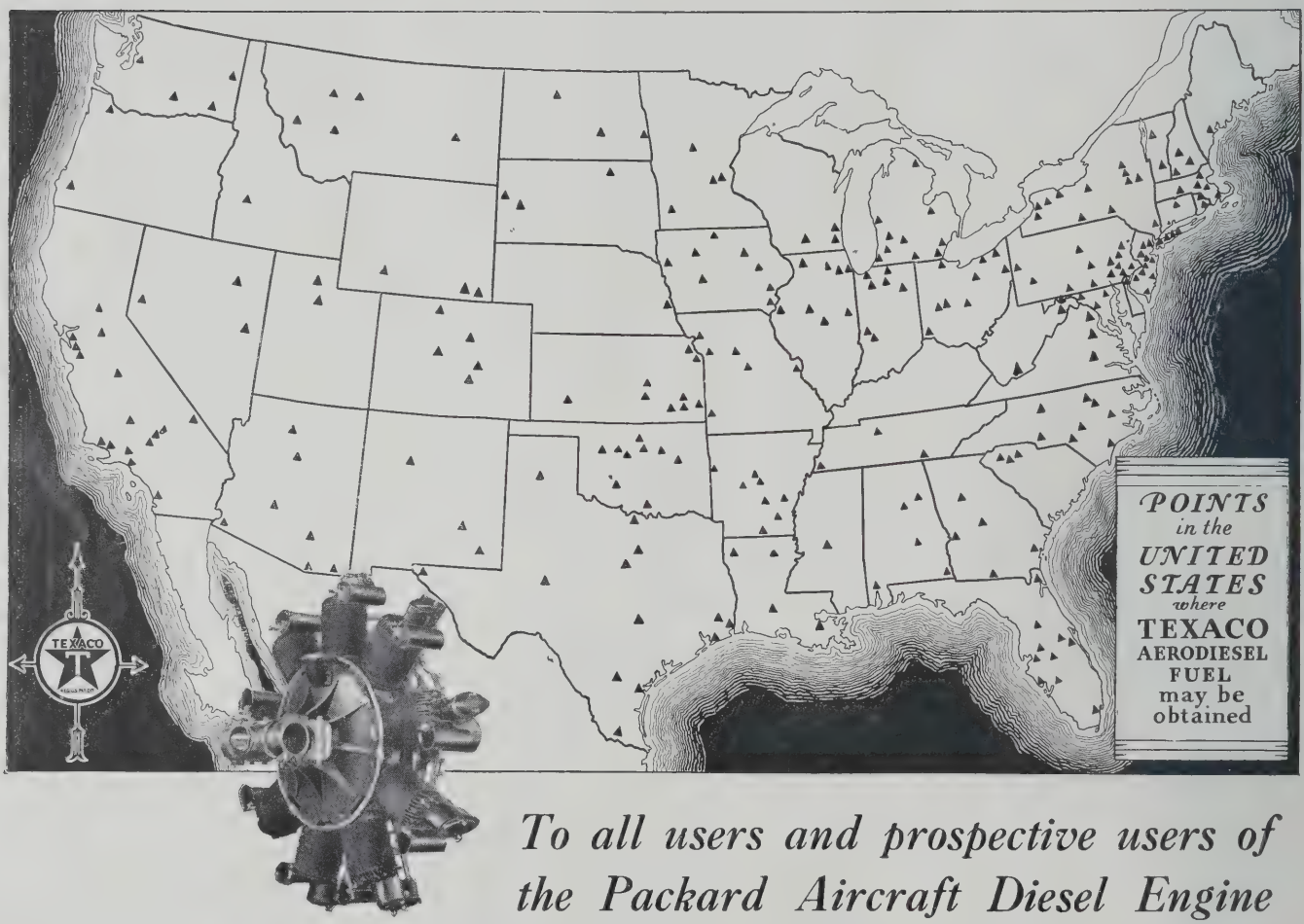

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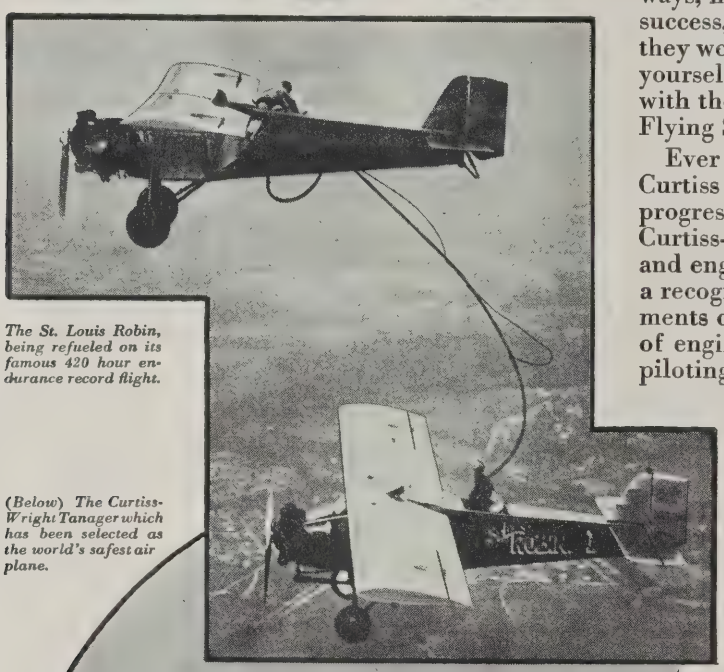
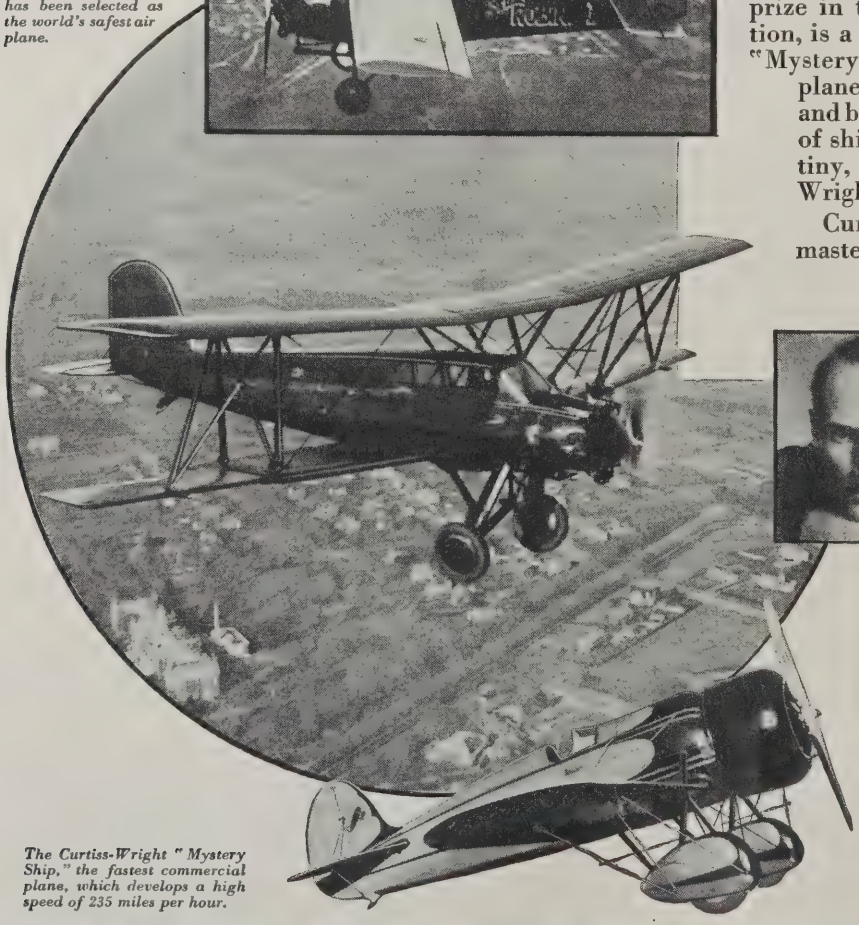
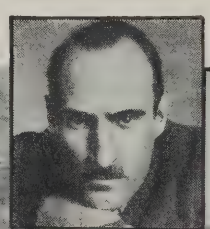


The St. Louis Robin, being refueled on its famous 420 hour endurance record flight.

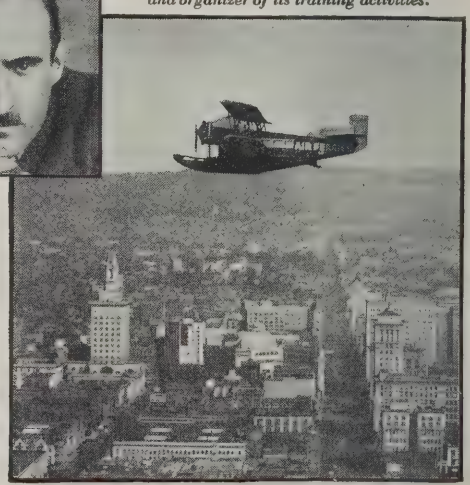
(Below) The Curtiss-Wright Tanager which has been selected as the world's safest air plane.



The Curtiss-Wright "Mystery Ship," the fastest commercial plane, which develops a high speed of 235 miles per hour.



Charles S. "Casey" Jones, world-famous pilot, is president of Curtiss-Wright Flying Service and organizer of its training activities.



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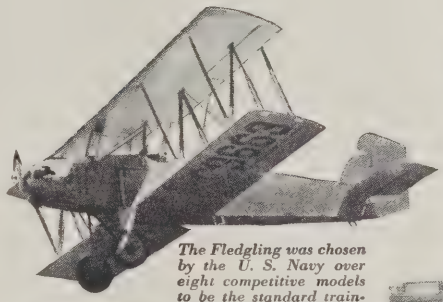

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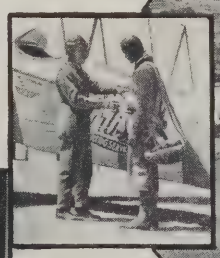

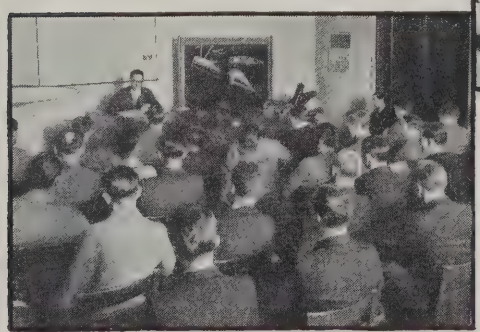

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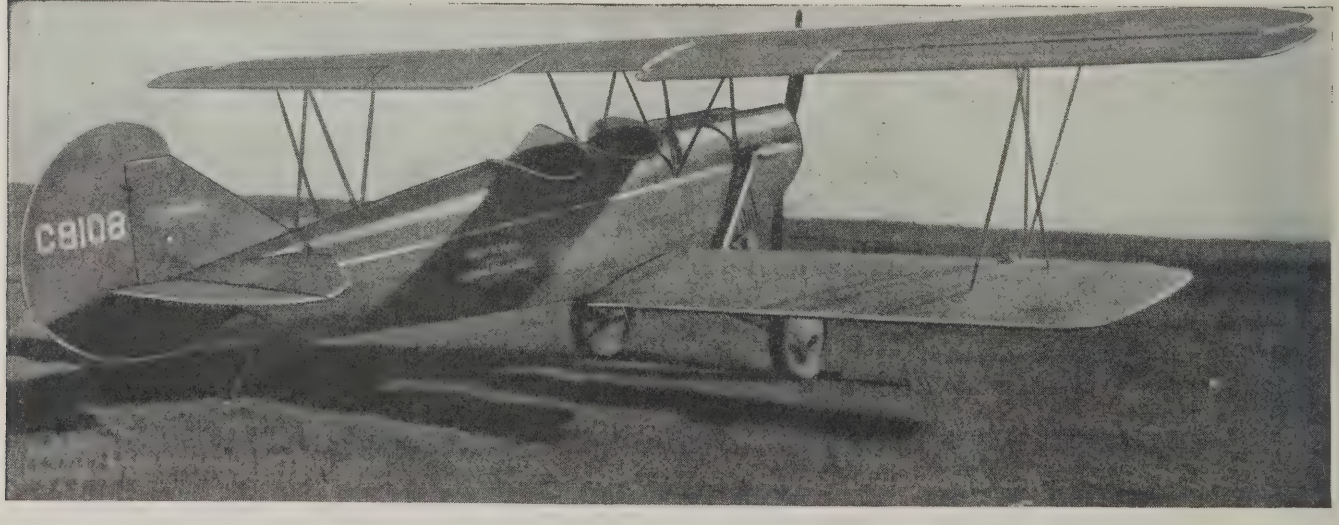

A PLANE FOR EVERY PURPOSE TRAVEL AIR

May 15, 1930

SOUTHERN AVIATION

Vol. 1, No. 9

Published monthly in the interests of aviation and all aeronautical activities in the southern states

T. W. McALLISTER, *Editorial Director.*
B. H. VINCENT, NAT M. JOHNSON AND S. R. McGILLIS, *Editorial Staff*

Contents

Opportunities for Aviation in the South 7
The Development and Use of Parachutes 8
South's First "Airway Station" 12
Recommendations for Aircraft Lubrication 14
Building a Dealer Organization 17
Tractor Distributor Uses Plane 18
Airplane Proves Value on Georgia Plantation 19
Pioneering the Southwest Airways 21
The Backstage of Aviation is the Flying School 23
The Development of Aerial Crop Dusting 25
News of the Southern Airports and Airways 27
New Airport Developments 34
Aeronautical Personalities 35
General News of the Aviation Industry 39
New Airplanes and Accessories 49

THE extensive use of airplanes in the more important branches of commerce and industry will be taken for granted, in years to come; but today, in most lines of business, it is still something of a novelty to find an airplane put to practical commercial use. Therefore we are glad of the opportunity of publishing, in this issue, the story of the use of an airplane on a Georgia plantation, also the story of how an airplane is helping solve the sales and service problems of a tractor distributor. We want to publish more material of this kind, and shall appreciate any suggestions from our readers as to where such articles may be obtained.

* * *

THERE are few flyers who are anxious to join the ranks of the "caterpillar club," yet it is gratifying to have the assurances of those who know whereof they speak, that the parachute is an exceedingly dependable means of descending from the upper spaces. This is the assurance given in this issue by an authority on the subject. The article on "The Development and Use of Parachutes" will be found an interesting narrative.

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This flight strikingly demonstrated the economy and reliability of the Packard-Diesel Aircraft Engine. Tested by the Army and approved by the Department of Commerce, it has introduced to Aviation a revolutionary new powerplant.

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Several manufacturers are already offering planes equipped with the Packard-Diesel Aircraft Engine.

Captain L. M. Woolson (left), chief aeronautical engineer of the Packard Motor Car Company and Walter Lees, test pilot, with the Packard-Diesel equipped plane in which they made the epochal flight from Detroit to Miami.

Now in quantity production, the Packard-Diesel is available to all commercial aircraft manufacturers.

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SOUTHERN AVIATION

Volume 1 May 15, 1930 Number 9

The Opportunities *for* Aviation *in the* Southern States

By Clarence Chamberlin

NO SECTION of the United States, in my opinion, offers better opportunities for the future of aviation than the South. And yet, compared to other parts of the country, the development of an air industry here seems to have proceeded very slowly. There are, of course, outstanding exceptions, notably in the establishment of air mail routes, municipal airports and the fostering of intelligent aviation programs by various states, cities and civic organizations, but the manufacturing and operating side of the picture has been somewhat neglected.

Clarence D. Chamberlin
Photo by H. D. Schoenhals

This is especially unfortunate because the South is suited by climate for all-the-year-round activity, both in the realm of flying school and air line or air service operation, as is no other part of the United States. It can be said to be nearly free of the seasonal handicaps that make the airplane a more or less migratory mechanical bird in other sections of the country and its percentage of bad weather days, necessitating curtailment or suspension of flying programs, is probably less than anywhere in the United States with the exception of the West and Pacific Coast areas. It is true that flying schools in the North and East continue their operations throughout the winter months, but their scope is greatly reduced and the cost of maintaining operations undergoes a heavy increase owing to inevitable cold-weather difficulties affecting both men and machines. In the South, where the coming of winter does not entail violent extremes of temperature, with the attendant handicaps of snow, ice and sleet, the problem of seasonal operation may be almost disregarded so that it is possible to carry on a consistent and efficient flying program throughout the year.

Another feature of the South that makes it a particularly rich field for the airplane is the relative lack of frequent and fast train service between its important centers of population and industry. The eastern states, New York and New England present a relatively far harder problem for the would-be air line operator for the very reason that he is forced to compete against the fastest and most conveniently arranged railroad schedules in the world. Their terrain, too, on the whole is far more formidable than that confronting the southern states flyer, and when we add to this the comparatively short distance between large cities in the North and East as well as the almost universal remoteness of their airports and landing fields from business and residential centers, it is apparent that the airplane can render a better service in the South, even though the South has been somewhat slow to realize this fact.

Anyone who studies a railroad map of the South will see in short order that there are numerous centers of population and industry which at present are rather remotely separated because railroads, of necessity, avoid the natural barriers that have been reared against them. Where a mountain intervenes, the railroad, if possible, goes around it. Where it goes across the barrier it is by a slow and tortuous route, following the winding course of streams and occasionally resorting to tunnels when it finds itself otherwise hopelessly blocked.

The airplane suffers from no such handicap. To it a straight line course from the point of departure to destination is the logical course except where weather or landing facility considerations dictate slight detours

(*Continued on page* 11)

The Development and Use of PARACHUTES

Lt. J. R. Tate making parachute jump from a Navy DT 2 at 1500 feet. Official Navy photograph

By W. E. Debnam

THE parachute, medium of man's first conquest of the upper spaces, a plaything back in the year 1691 when, according to Simon de la Loubre in his "History of Siam," one gentleman whose name, alas! has been lost to posterity, was wont to entertain the members of the French court by "leaping from prodigious heights sustained by a giant umbrella," has come to be in these modern times the life raft of the clouds, the life belt of the air, the one indispensable article of wearing appearel without which no well-dressed aviator is fully clothed and almost as necessary to the art of aviation as are the planes themselves.

To almost every man at some period of his life there comes the desire to try floating earthward in a parachute. To most of us, our youthful minds and imaginations gripped by that thrilling moment at the county fair when we watched, open-mouthed and breathless, some daring aeronaut, resplendent in red tights (they always wore red tights, it seems) do his "death defying descent" for the benefit of the assembled multitudes, this desire to take up parachute jumping as a life's work was dissipated not long after by a practice leap from the roof of the cowbarn, the woodshed or some other convenient promontory. We awoke to the realization that sister's parasol was never meant to sustain the weight of small boys who leap from barns and that parachute jumping "ain't all it's cracked up to be," anyway.

There are others, however, who are not so easily deterred. There is, for instance, Aviation Machinist's Mate M. H. Weiss, "parachute man" at the Hampton Roads Naval Air Station.

Weiss, who is a veteran of 13 years' continuous service in the Navy and who made more than a score of trips across the submarine-infested Atlantic during the World War as a member of the crew of a transport, took up parachute jumping in a serious way in 1926, and since that first time on Armistice Day of that year when he did a "pull off" from the wing of a plane at San Diego, has made more than four score parachute jumps.

A graduate of the Navy's parachute school at Lakehurst, N. J., Weiss, at those times when he is not called upon to put his art into actual practice, is in charge of the parachute department and storeroom at the Hampton Roads Naval Air Station, inspecting gear, checking up on 'chutes and generally seeing to it that men who go up in the air in ships carry strapped upon their backs a parachute so packed that it is ready for instant and unfailing service.

"Are you frightened when you make a parachute jump?" the reporter asked Weiss.

"Of course not," was the quick response. "If I was afraid I wouldn't jump. There's nothing compulsory about it, you know."

"Perhaps I put the question wrong," the reporter persisted. "Of course, you were not really frightened. But have you ever been uneasy during those times when you were falling through the air and the parachute hadn't opened?"

"No, I've never been uneasy," was Weiss' smiling response. "You see, I knew all the time that the 'chute was going to open and everything would be all right."

According to Weiss, this business of parachute jumping is as easy as the proverbial "falling off a log." To be even more specific, it's as simple as falling off the wing of an airplane. All you have to do, says Weiss, is to crawl out of the cockpit of a plane

roaring along some 1,000 or more feet from the earth, climb out on whichever wing strikes your fancy, grab hold of a convenient strut to steady yourself, face into the line of flight—and turn loose the strut.

The force of the wind, screaming through the wings, takes you off into space. Once off the plane, the parachute jumper counts four or five, pulls the release ring and comes floating earthward. Simple, isn't it?

The Mechanism of a Parachute

The mechanism of a parachute is comparatively simple. Heavy canvas strips about two inches in width go over the shoulders, buckle across the chest and go down between the legs. To this harness the parachute bag is fastened. In some style parachutes the bag is strapped between the shoulders and in others it serves as a cushion for its wearer. Slipped into a pocket located on one of the harness straps at a point just over the heart of the wearer is a metal ring about three inches in diameter. This ring is to a parachute what the spark is to a gasoline engine, the malt to home brew and the first kiss to a love affair—without it there's simply nothing doing.

Once the parachute jumper is well clear of the plane, he pulls this ring out of its little pocket and things begin to happen. With most style parachutes a wire running from the ring to the flap of the parachute bag releases the catch that holds the bag closed. A spring inside the bag kicks out the "pilot" parachute —a tiny parachute about three feet in diameter. This fills with air and drags out the main parachute, which also fills with air, and from then on it's merely a matter of picking a soft place to 'light.

There is another style parachute which has no pilot chute, the entire parachute bag being thrown open by the pulling of the ring.

To a certain extent, says Weiss, the parachute jumper can pick his landing spots, but the radius of his choice is comparatively limited. By pulling on one "shroud line"—the name carries with it a none too pleasant suggestion—and then the other, the jumper can guide his descent in such a manner as to steer clear of trees, telephone wires, barbed wire fences and other things that might cause embarrassment or worse.

There are tricks to all trades and landing a parachute, which appears the simplest of all the operations involved, is the hardest, says Weiss. When 20 feet from the ground the jumper, descending at a rate of about 14 feet a second, flexes his legs and, twisting about in his parachute, faces into the line of flight or, in other words, the lateral direction in which the parachute is moving. The jumper hits the ground with about the same force as that experienced when he jumps without a parachute from a height of about eight feet. As soon as his feet touch the ground, he takes three or four quick steps in the direction the parachute bag has fallen, this movement letting the air out of the silk envolope—and the job is over.

Training of Naval Parachute Men

In the training of parachute men the Navy sends them out into space on their first parachute descent by what is known as the "pull off." Just as its name indicates, in this maneuver the jumper pulls his parachute release ring before he jumps and waits to be dragged off the plane by the opening parachute. Describing his first experience Weiss said:

"It was cold as blazes that day. My class, which had about 20 men in it had completed its ground instruction and all of us were anxious to get our jump over with. We were jumping from an altitude of 2,200 feet. Finally it came my time, and, with a training pack on my back and another emergency pack in front, I climbed into the plane. After we had gotten up about 1,000 feet I climbed out on a wing and got set to let go the chute.

"It seemed we would never get to the

Above: A Navy flier "bails" out in a free fall from a trimotored plane. Official Navy photo.

Lower right: Jack Dare, daredevil parachute jumper, caught by the camera man as he landed on the site of the future million dollar airport at Birmingham.

proper height. It was very cold out there on the wing and I kept waiting and hoping for the signal to cast off. I was anxious to get it over with. Finally the signal came and I pulled the ring. We were travelling at close to 80 miles an hour and the 'chute opened with a jerk that almost pulled my arms out as it yanked me off that wing. From then on it was easy sailing."

This was Weiss' one and only experience with the "pull off." "I'll take the free fall every time," he says. "You get a jerk when the old 'chute is opening up but it's nothing like the one you get when the wind drags you off a plane."

The body of a man falling from a plane turns over and over in the air, Weiss says, but even as he hurtles through space, first head and then heels to the sky, Weiss says he keeps his eyes open and can see the plan soaring away and the earth rushing up to meet him. It makes no difference when he pulls the ring of the parachute—head up or heels up—the old 'chute works just as well either way. "I always pull the ring when my heels are up," Weiss says.

M. H. Weiss, "parachute man" at Hampton Roads Naval Air Station

It is a far cry from the modern parachute to that cumbersome "giant umbrella" that the entertainer of the French court used back in 1691. The name of the first parachute jumper preserved for posterity was Sebastian Lonormand, who in 1783 fashioned a parachute that worked successfully in leaps from the tower of the Montpelier Observatory. Lonormand, it seems, designed his parachute as a sort of fire escape from tall buildings. He does not appear to have pushed its manufacture and, so far as the writer has been able to determine by a diligent search of parachuting records, limited his jumps to a few performances for the edification of his friends.

Pioneer Experiments with Parachutes

In the year 1785 a gentleman by the name of J. P. Blanchard adjusted a parachute to the basket of a balloon and announced to the waiting world that he was going to make a parachute jump from a height of 300 feet. At the last moment, however, his nerve appears to have done a tailspin. He released the parachute, as promised, but the vehicle came floating earthward with a dog, instead of the esteemed Mr. Blanchard, as passenger. The dog escaped unscathed. Eight years later the inventor, throwing discretion to the winds, leaped off in the contraption himself. The descent was a partial success, the daring aeronaut escaping with no worse injuries than a broken leg and minor cuts and bruises.

Early in the Nineteenth Century a Frenchman by the name of Andre Jacques Garnerin invented a parachute which worked successfully. It was fashioned like a large umbrella, with a basket attached to the handle in which the jumper rode. Andre, it seems, was so unfortuate as to be cast into prison at Marchiennes and while in durance vile had plenty of time to ponder the mysteries of parachuting. On October 22, 1807, Andre took off from Monclau Park, Paris, in a balloon and, attaining a height of more than 6,000 feet, cut loose in his parachute! He landed unhurt.

In September of the following year he did the same thing in London, taking off from North Audley Street and attaining a height of 8,000 feet. In this instance, when the parachute was first released it failed to open and the thousands who watched spent several anxious seconds as they saw the intrepid Andre come hurtling downward. The contraption finally opened, however, and, spinning around like a top as it fell, descended easily with Andre none the worse from his experience than a very sick stomach.

So far as is known, the first instance in which a parachute was called into play to save the life of an aeronaut in distress took place on July 24, 1808. A Polish balloonist by the name of Jordaki Kuparento was sailing along over the city of Warsaw, says the historian, when suddenly his balloon caught fire. Choosing the lesser of two evils, Jordaki hopped overboard with his parachute and, not a little to his surprise, made a safe landing.

In the year 1814 an Englishman by the name of Robert Cocking, who had gone airminded witnessing the jump of Andre Garnerin, designed a parachute which he said would do away with the spinning tendencies of Andres 'chute. This contraption, weighing 400 pounds, employed the old umbrella style but the top of the 'chute, instead of sloping downward so as to retain the air, sloped upward! Cocking labored for many years over his invention and early in July, 1837, announced that he was ready to put his theory into practice. On the 24th day of that month a balloon with one Charles Green as pilot and Edward Spencer as passenger and with Cocking in his cumbersome parachute attached to the bottom of the basket, took off from the Vauxhall Gardens, London, at 7:30 o'clock in the evening.

They were seeking an altitude of 8,000 feet, but when at 8 o'clock, with all the ballast gone and the balloon over Greenwich at an altitude of only 5,000 feet, Green yelled to the waiting Cocking below that he was unable to go higher and that if he intended to get his jumping done before dark he'd better be about it.

Cocking released the catch that held his parachute to the basket and let go. His claim that his 'chute would not revolve as did the Garnerin parachute was absolutely sustained. It differed from the Garnerin 'chute also in that it fell as straight as a plummet with never the slightest pause in its downward flight. At a height of about 400 feet the thing collapsed completely. Cocking, of course, was killed instantly.

With varying success the parachute has been used by balloonists from these early dates to the present

Students at U. S. Naval Air Station see what happens when the rip cord is pulled. The instructor has pulled the ring to show how pilot chute is kicked out to pull the main chute from the pack. Official Navy photo.

time. It was not until the year 1924, however, that it became a regulation part of the equipment of Army and Navy airplane pilots. Throughout the World War the men of the Allied air forces fought their battles in the clouds with never a thing to stay their downward plunge in case an incendiary bullet in the gas tank set their plane on fire. Parachutes were used in some few instances during the latter days of the war by German fliers but never to any great extent.

In 1924, as stated above, the parachute became a regulation part of the equipment of every Army and Navy aviator, the regulations requiring that the men of the service wear parachutes at all times they are in the air. Civilians who take flights on service planes and airships are also requested to wear parachutes, although it is at their own discretion. Before going aloft, however, they are required to sign a paper which releases the Government from all claims for damages in case of accident.

Almost every day as one glances through the newspapers he sees stories which tell of lives saved by the parachute. Lindbergh, himself, is four times a member of the "Caterpillar Club," whose membership is confined to aviators who have been forced to "go over the side" to come down by the "silk elevator."

Nor is the advancement of the parachute yet complete. The dawn of a new era in parachute manufacture was heralded in March, 1926, when at Los Angeles an aviator by the name of Carl Oaltze, with a parachute rigged to the plane itself, ascended to an altitude of 5,000 feet and deliberately threw his plane into a stall. As it plunged earthward he released the plane parachute and without touching the controls settled safely to earth. The plane suffered no worse damage than a smashed landing gear.

Some aviators of the country are firm in their conviction that the time is coming when all planes will be equipped with parachutes similar to the one used by Oaltze.

The Opportunities for Aviation

(*Continued from page 7*)

in the interest of greater safety, and even then the vastly superior speed of the plane places it entirely out of comparison or competition with the railroad train. Infrequent schedules and almost as infrequent stops by the crack through trains from the North are merely another advantage that may be turned to account by the air line operator by a careful study of local conditions and the proper timing of the service that he, himself, will offer.

Of course, the well-rounded aeronautical development of any country, section or community entails the manufacture of aircraft as well as its sale and operation, on both a personal and business basis, in the area involved. It seems to me that the South has missed a good opportunity here and that much might be done with it in the future. Factory sites are available at less cost than in the more congested areas of the North ant East; labor, either skilled or unskilled, is cheaper, owing to the lower cost of living in the South; and labor troubles are not so likely to develop as in states where the percentage of foreign-born and not yet assimilated population is higher.

An excellent example of the truth of this statement is afforded by certain western aircraft centers that have forged into the limelight of recent years, especially Wichita, Kansas, where economy of production and resultant low costs not only have netted airplane builders a handsome profit but have been a source of deep concern to manufacturers in the East who probably would have been far more seriously affected but for the fact a large source of the business is in Government contracts. To my way of thinking there is no good reason why the example of Wichita and other western communities can not be duplicated and surpassed by many sections of the South that might well turn their attention to the opportunity.

South's First "Airway Station"

THE only airway station in the South, insofar as is known to officials of the company, has been opened to the public by Southern Air Transport, Inc., at its terminal in Dallas, Texas.

The term "airway station" is used to compare with railway stations, since the building does so compare in facilities and comforts for the traveling public. It is a structure apart in purpose and location from the hangars where Southern Air Transport mail and passenger ships are concentrated between runs; it is concerned entirely with passengers and with operations of the air lines maintained by the company.

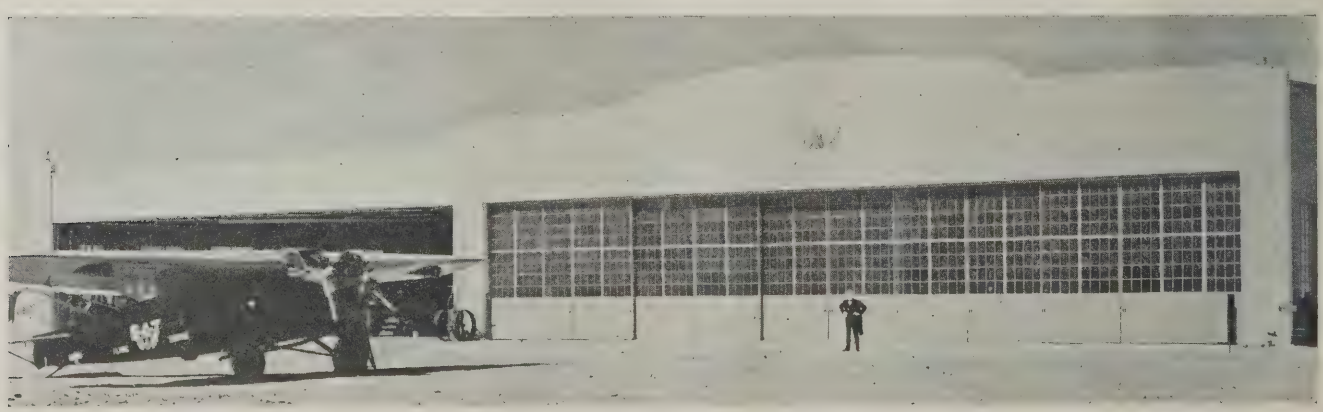
Located directly on the flying field, at the municipal airport in Dallas, the station also serves as headquarters for the operations department of the company.

All the ground floor is devoted to passengers, pilots and conveniences for them. The upper story is given over to company purposes, but passengers are again served on the roof, which has been fitted up as an observation stage and roof garden.

Information and ticket windows in the station are operated exactly as in railway stations and, with the new standard air tickets, there is at first glance no distinguishable difference. The ticket office is located at the far end of the commodious waiting room, flanked by rest rooms, telegraph offices, a pilots' club room and a restaurant.

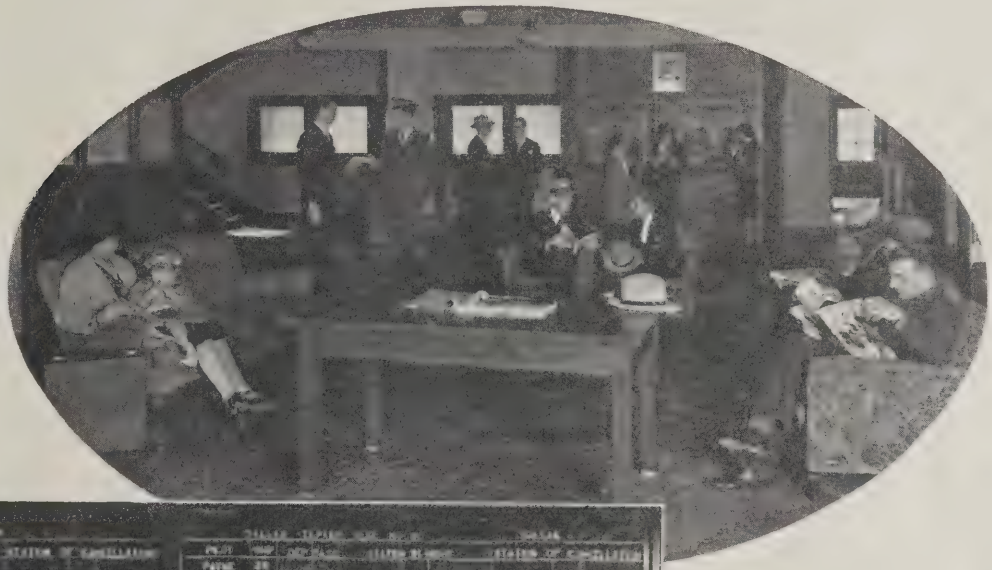
Plenty of automobile parking room is provided on three sides of the station building.

The S. A. T. private short wave radio plant and office are located on the second floor, where the operations department is the focus of activities. In the operations office is the airplane dispatching board, with separate panels for passenger and mail ships. Placards bearing the names of pilots and the numbers of ships are moved from space to space on the board, showing the last reported position of all planes at a glance. Information is gathered by telephone, telegraph and private radio by the airplane dispatcher, whose board record shows the number of passengers or pounds of mail carried by each and its departing time from each station. Pilots and ships off run, ferry trips, stations where runs are cancelled for any reason and stations at which pilots and ships are in for the night also are shown on the dispatching board.

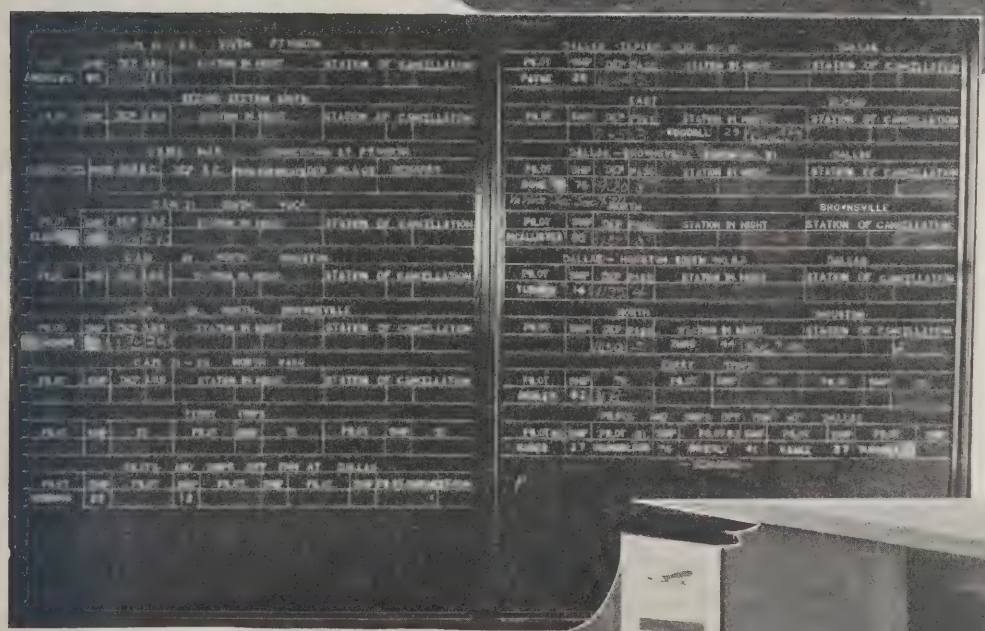


Above: Southern Air Transport hangar at Love Field, Dallas, Texas. At top of page is shown the company's new airway station and operations building at Love Field.

Complete Passenger Handling Facilities are Found in This New Airway Station at Love Field, Dallas



At right: A group of air passengers waiting for planes in the new airway station waiting room and ticket office at Love Field, Dallas.



Left: Plane dispatching board in the operations office at Dallas. Position of all planes on the different routes may be told from a glance at the board. Reports are received at frequent intervals by telegraph or radio and posted on the board.

Prospective passengers find in the waiting room at the new airway station, information and ticket windows similar to those which will be found in any modern railway station.

General Recommendations for The Lubrication *of* Airplanes

By H. L. Kauffman
Consulting Lubrication Engineer

THE engine of an airplane is the most important unit requiring lubrication, but there are other parts that also need either oiling or greasing at intervals. In addition, there are certain external parts of the aviation engine that are not lubricated by the engine lubricating system—it often being necessary to lubricate such parts by hand prior to each flight; as the bearings of valve rocker arms and the magneto.

In most cases, rocker arm bearings are equipped with an Alemite or similar fitting for grease gun lubrication. Concerning the lubrication of rocker arms, Wright Aeronautical Corporation says:

"Lubricate the rocker arms lightly with the Alemite gun, using a No. 3 grease free from graphite, soap or other compound which might cause caking on the valve stems, about every 50 hours' of engine running time."

This would mean the use of a lubricant of the "solidified-oil" type. Concerning the lubrication of the upper and lower push rod ball ends, the manufacturers of Wright "Whirlwind" engines say:

"Grease the upper and lower push rod ball ends after every 20 hours' of running with a graphite grease. **Under no circumstances should this grease be used on the rocker arm ball bearings."**

Depending upon the engine design, either plain or sleeve-type bearings, or else a ball or roller bearing, are commonly used to carry the rocker arm. Where housings are so designed to retain oil, a heavy, highly-filtered oil with a viscosity of about 120 seconds at 210° F. and with a low pour test will satisfactorily lubricate the rocker arms. In other cases, a properly compounded semi-solid lubricant, of such body as to remain within the bearing at normal temperatures and yet sufficiently fluid to maintain lubrication at low temperatures, should be employed. Abnormal wear of rocker rollers or ball contacts can be prevented by wiping these parts with lubricant the same time the rocker arm bearings are lubricated.

The carbureting system is exceedingly complicated on an airplane engine, and is designed to meet the limited speed requirements. Multiple carburetors, or multiple venturis, jets and manifolds are used—together with compensating devices for rapid altitude changes.

Magneto ignition has endured in aircraft practice, and twin ignition is almost universal. This kind of a system is lighter, more compact and exceedingly dependable. Aircraft magnetos are a refinement of the automobile type in structural details, waterproofing and kind of materials.

Three kinds of starters are used on aircraft, when any are used at all. Electric starters, air starters and geared hand-crank starters are the methods in use. Electric starters are of two types: one with a powerful battery-operated motor, geared down, and turning the engine through direct gearing; the other the so-called "inertia electric starter" that utilizes a comparatively low-powered electric motor, which spins a flywheel at a high speed, and this is applied to spin, briefly, the engine. Air starters are air motors cranking the engine from released air in a pressure tank.

Lubrication of magneto bearings is of vital importance in connection with the operation of an airplane engine; for, if ignition is not positive and assured, serious trouble is likely to result. To eliminate the possibility of burning out or seizure of distributor wearing elements, aircraft magneto manufacturers commonly employ a ball-bearing distributor, with bearings properly housed to retain oil.

The manufacturers' recommendations as to the frequency of magneto lubrication, and the grade of oil to be used, should be adhered to closely. The Scintilla magneto is used on Wright, Packard, and a number of other makes of aviation engines. Concerning the lubrication of this magneto, the Scintilla Magneto Company has the following to say:

"Place 30-40 drops of oil in the front oil holes or until it appears at the overflow hole which is located about two inches below the timing window. Put about 5 drops of oil in the back oil hole. Use the best grade of medium-bodied engine oil. The magneto should be oiled about every 25 hours of engine operation."

A "medium-bodied" engine oil would be one with a viscosity of somewhere between 200 and 300 seconds at 100° F. An oil with a low pour test is preferable for low-temperature operations.

Where magneto bearings are designed for grease lubrication, a fibrous grease of medium consistency capable of withstanding a temperature of 180 to 200° F. should be used. Such bearings are usually so designed and located that re-packing with fresh lubricant is only necessary when the engine is overhauled, which will be about every 200 hours.

Sometimes the battery-generator ignition is employed. This form of ignition is supplied by two distributors mounted in inclined position at the rear end of the engine in conjunction with a generator mounted either vertically in the Vee or horizontally at the rear end of the crankcase. Such distributors are usually driven at one-half engine speed by bevel

gears meshing with integral pinions cut on the right and left hand camshaft upper drive shafts.

Such a distributor commonly has one annular ball bearing and one roller bearing, which are lubricated by placing 8 to 10 drops of medium engine oil in the oil hole in the top of the cam every 16 to 20 flying hours. The generator is also usually provided with annular ball bearings, which are lubricated by placing 8 to 10 drops of light engine oil in each oiler every 6 to 8 flying hours.

Where airplane fuselages are made of steel tubing, it is very necessary that means be taken to prevent the internal corrosion of that tubing; for it is a part of the plane that it is impossible to note the extent of the wear.

Several manufacturers of planes reduce to a minimum the possibility of such corrosion by so preparing the whole system of tubes of the fuselage frame during construction that there is a continuous passage from each member to all adjacent members. This condition permits a thorough and complete coating of rust-retarding oil to be applied to the inside of every part of the fuselage. Re-oiling the fuselage may be done at any time the owner desires after the plane is in service merely by pumping hot oil in at an opening near the tail post, and when the structure is thoroughly flushed the oil runs out of an aperture at the highest point of the fuselage.

Pressure lubrication of airplane chassis. Photo by courtesy of U. S. Air Compressor Co.

The control stick should be oiled occasionally with a light-bodied engine oil. Rudder and brake pedals require oiling only occasionally. The brake pedal bearing can be reached with an ordinary spout oiler, while a special fitting is usually provided for the lubrication of the rudder bearing.

Bakelite pulleys should not be oiled. These parts are impregnated with graphite, and oiling will cause them to collect dust and to wear rapidly. Very frequently, one group of these pulleys in the rear section of the fuselage and two pulleys in the brake control system are carried in swivel mountings, and these swivel bearings should be oiled. Bell crank bearings and universal joint blocks in the aileron control system require a few drops of oil every week.

Where airplanes are fitted with folding wings, aileron controls are connected by use of split levers at the wing root. The faces of these split levers should be well covered with graphite grease every week. Lack of lubrication at this point will cause stiff aileron action. Aileron ball bearing hinges and tail surface hinges should be oiled weekly.

The chassis of some airplanes is of the split axle type, the right and left sides being entirely independent. In the Fairchild, for example, each side consists of an axle tube, a drag strut, and an oil-filled shock-absorbing strut. The drag strut has a ball end which is clamped between socket plates. A bronze axle flange receives the lower end of the oleo strut. All of these bearings require frequent oiling and, in addition should be dismantled occasionally and cleaned. Upon re-assembly, the ball sockets on the drag strut should be well packed with grease. Never oil wheel bearings that are fitted with oil-less bushings, since attempts to oil them will probably result in oil getting on to the brakes and spoiling their action. However, when wheels are assembled to the axle, it is advisable to apply a light coat of hard grease to axle and wheel bushings in order to prevent wearing of bushings.

The oleo strut is very rugged and requires very little attention other than to keep it filled with liquid. Lockheed Hydraulic Brake Liquid should be used—never use oil except in an emergency. A pipe plug near the upper end serves as a filler and lever gauge. Fill the strut until the liquid is level with this hole, while the plane is resting on its wheels. When the level of oil gets low it affects the shock-absorbing action of the device, and if allowed to get very full will result in a damaged chassis. The main objection to the use of oil is the fact that it will stiffen when chilled, thus making landings dangerous. However, for service in weather colder than minus 40° F., kerosene should be used to fill the oleo strut.

Tail skids are very often of the swiveling type, fitted with a shock-absorbing unit. The end of the skid is fitted with a stellited wheel and stellited convex wearing plate. The universal ball socket is fitted with a pressure oil fitting, and should be lubricated weekly. The lower end of the compression strut should receive the same attention, but the upper end needs no oil—since oil would seep down on to the rubbers of the compression strut and allow them to collapse, causing failure of the whole tail skid assembly. The forward bearing bushings should be oiled weekly, and at least once a month should be extracted and well coated with a graphite grease.

Apply oil about each week to the aileron push

rods, the stabilizer rear beam bearing at fuselage, the front and rear strut bearing on the stabilizer beams, and the swivel lugs on the upper ends of the front struts. A lighter grade of oil should be used in winter than in summer.

Supercharging is accomplished by using either a rotary, centrifugal or reciprocating device, though the latter type is now almost obsolete. Continuous pressure is involved in the operation of both the centrifugal and rotary superchargers—pressure being exerted upon the entire volume of air used in combustion.

The speed at which a supercharger operates depends upon its manner of drive, which is derived from the engine. Gear drive or the principle of the turbine using exhaust gas as the impelling medium may be used. When necessary, the modern gear drive can be run as high as 30,000 r.p.m.

Where the supercharger is located, that is, externally or internally, depends upon the type of engine. In the radial engine, the supercharger is almost always built into the engine where it acts as a rotary distribution system at part throttle and as a supercharger at full throttle. In a vee-type engine, however, the supercharger is usually located to the rear of the engine. When the device is built into the engine, lubrication of bearings and driving gears is accomplished through suitable leads from the main oiling system under the same pressure that forces the oil to the engine bearings.

Aviation Engine Fuels

The effective lubrication of an airplane engine is so closely related to the fuel used as a source of power that a few words can well be given at this point on aviation engine fuels.

In general, the fuel used in an airplane engine should be of the grade known as "Domestic Aviation Gasoline, Grade B," or of a quality superior to that. Use of an inferior fuel is likely to lead to unsatisfactory operation and serious damage to the engine. Most manufacturers will assume no responsibility for the performance of an engine when inferior grades of fuel are used. In case of emergency, when approved gasoline is not available, benzol gasoline, ethyl gasoline, or high test automobile gasoline should be used. The engine should then be operated at reduced throttle and with the mixture control in the "Full Rich" position.

In cold weather it often happens that the oil in an airplane engine does not attain sufficient temperature to flow freely, even though an oil having a very low pour test is being used. Such a condition is preventable by lagging the lines running to and from the external oil tank. A layer of asbestos cord, wrapped with friction tape and then shellacked, makes an excellent lagging. If asbestos is not available, several layers of ordinary packing cord will serve.

Unless an airplane has been stored in a heated building, in cold weather it will be necessary to preheat the oil before starting the engine. If possible, much time can be saved if high-pressure steam or some other source of heat is available for heating the oil in the tank—in view of the fact that cold oil takes considerable time to drain. If no method is available for heating the oil while still in the tank, it is suggested that the oil be drained after each run and while still warm. It can then be heated and replaced in the tank when the airplane is next to be used.

In cold weather, to hurry the "warming up" of the engine, the carburetor hot spot or air heater should be used at all times in order to insure a better mixture and to prevent ice forming at the choke. Moreover, the louvers in the front cowl should be closed with the shutter when starting the engine. The shutter should then be opened as soon as the engine is sufficiently warm. A large-sized pressure gauge and oil line are essential when operating an aviation engine at low temperatures, in order to obtain an immediate reading of oil-pressure variation in the engine. Otherwise, pressure readings would be inaccurate.

In a dry-sump system, the filling of the crankcase with oil is usually due to lack of priming in the discharge pump. Disconnect the main discharge line from the engine and put on a short length of garden hose. While turning the engine backwards, feed oil into this hose until a quart or so has been sucked into the pump. Check the oil pump, strainers and lines for leaks or stoppages. It should be borne in mind that oil will accumulate for several minutes in the crankcase before the scavenging pump is primed. As the pump starts the trouble will be rectified.

Bearing failures, excessive consumption, rapid blackening of the oil, and the like, are some of the complaints frequently made of aviation engine oil. There never has been a bearing failure in any piece of machinery when an adequate quantity of oil was reaching the bearing. Bearings burn out from lack of any kind of lubrication—rather than from the application of the wrong grade of lubricant or of one of inferior quality. Bearing failures may result from a clogged up oil duct, but if the engine has been given the daily inspection that it should receive, any stopping-up of an oil line will be noticed at once.

Just as in the automotive engine, so too in an airplane engine does oil-consumption increase with an increase in speed. Sometimes use of a heavier grade of oil will elimnate the tendency of an engine to consume excessive quantities of oil under normal running conditions, but more often the matter is one that calls for mechanical changes in the engine.

Blackening of aviation engine oil, as is also true of automotive engine oil, is due both to oxidation and to carbonization. Oxygen from the air mixes with some of the oil to form a soft black material—some of which settles out in the crankcase, the balance remaining in the oil to turn it black, and being so finely divided that it is not removed by either oil screens or filters, though some of the oxidized material will be caught in a filter. The oxidizing action is accelerated by heat and excess air—the hotter an engine runs and the more air that is brought into contact with the oil in the sump, the more oxidized material will form.

Building a Dealer Organization

Plans and Policies of Building a Dealer Organization Adopted by a Leading Airplane Factory's Southwestern Branch

"AIRPLANE merchandising is in its infancy, and every factory must work out its own policy," says G. Q. Caldwell, district sales manager of the American Eagle Aircraft Corporation of Texas, recently established at Love Field, Dallas, and with several dealerships already located in the Lone Star State.

"However, we prefer for our representative a man who is established in a community and who has a good reputation as a merchandiser. Our preference leans particularly to automobile dealers, for in many ways the selling of airplanes resembles the selling of cars and, I fully believe that it ultimately will reach the stability that now marks the automobile trade.

C. Q. Caldwell, American Eagle representative at Dallas

"In taking on a new dealer, we impress upon him that ours is a service proposition, just as the sale of cars involves service, following the demonstraton that wins the customer's approval and purchase of a car. While service may not be immediately necessary it is essential that it be provided on a standardized basis for the plane owner. That is what has actuated our company in its policy of establishing numerous direct factory branches, with service and training centers, throughout the country.

"It has been our experience that, while a good pilot is an advantage, it is not necessary that the dealer should be a particularly good pilot, as long as he has sales ability to push our product and the knowledge to back up his sales with service. The sale itself is based upon demonstration and letting the customer sell himself."

Occupying hangar No. 6 at Love Field, this direct factory branch of the American Eagle Aircraft Corporation, of Kansas City, provides every facility for quick service or demonstraton, for dealers of the territory.

"We opened this direct factory branch in conjunction with our factory policy of providing adequate service to dealers and customers, close at hand," said Mr. Caldwell, in a recent interview. "We now have dealers in all of the principal cites and a number of the smaller towns of Texas. Incidentally, the number of comparatively small cities which are building first-class airports, and thus becoming available for dealerships, has been a matter of wonderment to me. The enthusiasm for aviation which has resulted in the building of the ports, is especially marked in central and western Texas.

"In our factory branch here, we will carry a complete stock of planes and service parts, thus backing up our dealers to the limit. We thus make it possible for them to bring interested prospects to us, if they are not able to demonstrate themselves, and we will demonstrate for them. Too many men have tried to be dealers in the past by selling planes from catalogs.

"E. E. Porterfield, Jr., president of the American Eagle Aircraft Corporation and the Porterfield Flying Interests, Inc., has realized this situation keenly and it was the primary reason for our coming to Dallas, which has a splendid reputation as a flying center. In addition, the Porterleld Flying Interests, Inc., now are taking over 100 flying fields in all parts of the country. Each field is being put in charge of a competent pilot salesman, who will take care of the student and passenger business of the particular locality, as well doing what he can to create interest in aviation as an industry. This movement is well enough financed to insure addition of sufficient equipment to handle adequately its particular local situation.

"Two fields established and operating successfully under this plan are those at Coffeeville, Kan., and Carthage, Mo. Both these ports are doing a nice business. In addition to the activities I have described we operate a 'pay as you fly' training school for students, here at Love Field. Though we have been established but a relatively short time, we now have fifteen students, while inquiries are coming to us from all parts of the United States and even from foreign countries. This is no less a tribute to Dallas than to our school, for this locality has earned a reputation of being a good place to learn to fly."

(*Continued on page* 20)

Tractor Distributor Uses Plane *in* Sales *and* Service Work

THE practical value of an airplane in contacting customers for merchandise of high unit value and making service trips, over an extensive territory, has been demonstrated in the experiences of R. L. Harrison, Caterpillar tractor dealer for New Mexico, with central offices in Alberquerque.

Upon assuming the agency he found that he was confronted with too many of the great open spaces to adequately cover his territory by train or automobile. About a year ago he turned to the airplane as a means of reaching prospective customers, and in some cases he has flown distances of 800 miles to call upon them.

"We have found our airplane to be a distinct advantage in covering our Caterpillar territory in New Mexico," Mr. Harrison says. "Because of the great distances between towns in New Mexico it is possible to save a great deal of time with a plane.

"When a rush order for parts comes in and they are not too heavy to be transported by plane, we frequently transport them to the customer by air. While this costs them considerably more than express, they seem willing to pay the additional cost because of the time saved."

Mr. Harrison located in New Mexico soon after the close of the war and has been in business in Alberquerque continuously since that time. On account of the great distances between towns much time was consumed in calling on prospective purchasers until a year ago, when Mr. Harrison became air minded and purchased a three-place biplane in which to fly to the outlying cities in his territory.

"I believe that the plane adds to the prestige of the firm," says Mr. Harrison. "I have found it especially valuable in calling on governmental bodies, county boards or commissions, state highway departments, etc. They are all interested in air transportation and when we arrive by air to discuss tractors with them, it seems to eliminate a good deal of sales resistance."

Mr. Harrison just recently completed a trip to the Caterpillar factory in Peoria, Illinois, which took him one week, giving him ample time to transact his business while there.

Mr. Harrison learned to fly about a year ago and says that 34 years is not a handicap to any man in learning to fly. In addition to the plane's value as a business asset, he states that he has gotten a great deal of personal pleasure from flying it.

"The longest sales trip made recently with the machine," says Mr. Harrison, "was 800 miles in length and was consummated in two days. A total of four prospects were called upon during that time. The cost is higher than the ordinary method of transportation but the time saved more than offsets the additional expense of visiting the prospects by airplane."

The Airplane Proves Its Value *on a Georgia Plantation*

By Roy E. Butler

DOWN near Stockbridge, Georgia, there is a dirt farmer who uses an airplane on his farm with about the same nonchalance that is attached to the routine duties of milking the cows or driving the tractor or automobile. However, Colonel Bellah, who owns a large plantation near Stockbridge, is not known as the "flying farmer," as most of the flying is done by his two sons who pilot the plane for crop dusting, passenger hops on Sunday, delivery of produce, distributing fertilizer, and sometimes for making a hurried trip to Atlanta and other nearby cities when a broken piece of machinery must be replaced at once.

The plane was put into service on the Bellah farm nearly three years ago, at a time when a plane was still a curiosity at some airports; and when the Colonel's two sons persuaded him to buy a plane it caused much speculation among his neighbors.

The old barn on the Bellah farm was converted into a hangar

Several years ago, the Colonel's youngest son, Gordon, stopped his plow and went to one of the nearby springs where he was partaking of a prolonged drink of the cool water and engaging in a little day dreaming, as is the custom among farm boys in the summer time. There came from the distance a gentle purr which grew more distinct, and shortly an airplane came into view and flew directly over the Bellah farm.

That settled it for Gordon. He decided to abandon the plow and learn to fly, if for no other reason than to feel the cool breezes against his face as he imagined they were being enjoyed by the pilot in flying across his father's farm.

In a few days, Gordon left the plantation for Candler Field near Atlanta. After twelve hours of very capable instruction he made his first solo flight. He was captivated by the fascination of flying and continued to work and fly until winter when he returned to the farm to find his brother, J. C., who had been a mechanic for an automobile company in Detroit, home on a vacation. They both decided to raise a crop the following spring and apply the proceeds towards the purchase of an airplane.

The boys were blessed with a wonderful crop that season and after talking the matter over with their father they decided that a plane of their own must be purchased at once. This they did, and here is where they met the writer, who at that time was conducting a small flying circus and invited the boys along. During this connection the ship paid for itself during our barnstorming tour of the South Georgia and Alabama towns, where we found money rather plentiful among the citizens after a successful crop year.

When the barnstorming season ended the boys returned to their farms with the plane. The subject of an airport never entered their minds, as the large hay fields and pastures on the place afforded natural landing facilities. They converted an old barn into a hangar, where the plane is still housed when not in use.

The writer recently returned to the farm to find that the ship was in constant use and had again more than paid for itself in various and diverse ways.

The boys had built an attachment for dusting their large cotton fields, as a protection from the boll weevil, and also another attachment for broadcasting fertilizer, while still another is used for dusting the big peach and apple orchards on the farm. The use of the plane on the Bellah farm has aroused much interest among neighboring farmers, because the plane in addition to providing recreation in flying has proved itself a valuable asset to the Bellah family, in marketing agricultural products.

During the present spring, the plane has been used to deliver cabbage plants grown on the Bellah farm. The young plants are delicate and must be transplanted as quickly as possible and, consequently, after being taken from the ground must be transported to their destination in the shortest time possible. A good market for cabbage plants has been developed and during the past spring they have been delivered to all sections of the state from the farm and in most instances have been planted on the same day they were taken from the beds.

Strawberries were carried to market in the plane during the past summer and a more extensive crop

Left: Gordon Bellah in the cockpit and Colonel Bellah standing. Center: Two airminded fox hounds ready for a trip to the hunting grounds. Right: J. C. Bellah, the mechanic.

is being grown this summer with a view to marketing them by plane.

The plane not only earns its keep during week days by delivering farm products but on Sunday is flown to some nearby community where it is available for short hops or cross-country flights. And there are still enough people in the small towns who are anxious to take their first ride to make this a profitable Sunday job for the plane.

Plane Used on Hunting Trips

During the winter months the plane is frequently used for transportation to and from the hunting grounds of the state. Instead of spending two or three days going and coming to and from the hunting places, the hounds are placed in the cockpit and within a few hours they are in action on the hunting grounds; or, when a week-end fishing trip is decided upon in the summer, the distance to fertile lakes or streams is reduced to a few hours.

On most any farm there is an abondoned barn or other building that can be converted into a hangar at little expense, and a pasture or hay field may be made to serve the purpose of a landing field.

Colonel Bellah believes that within a few years the plane will be used to deliver the morning supply of chickens, dairy products, or fresh vegetables direct to the market or the individual consumer in the city. He believes that within a few years there will be produce planes from the surrounding farms lined up at the airport every morning, just as the cars now line up at the curb market in the city.

Building a Dealer Organization

(*Continued from page* 17)

Mr. Caldwell, himself, first started to fly in 1925 in a desultory way and it was not until 1927 that he took it up in a serious way. At that time he was engaged in the financing business in Little Rock. Commissioned in the 154th Observation Squadron, U. S. N. G., with headquarters in Little Rock, when Maj. J. Carroll Cone, present sales manager of the American Eagle Corporation, took command, he was made squadron adjutant This was immediately after the flood disaster in the spring of 1927. For two years he served in that capacity with varied experience. One of these was piloting Major Cone to almost every town in the state, in his "flying campaign" for the governorship of Arkansas.

In 1928 he went with Command-Aire, Inc., of Little Rock, as manager of the Command-Aire flying school, in which position he remained until July, 1929, when he was employed by the Universal Aviation Corporation as a pilot on their rail-air transcontinental run. He remained in this position until February, 1930, when he joined American Eagle.

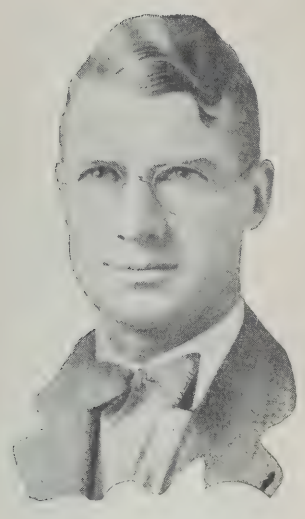
Caldwell's Greatest Thrill

"While I have had my share of air experiences, my greatest thrill came to me last November and, fortunately for me, had a happy ending," said Mr. Caldwell, when pressed for further details. "I was flying the mail at the time and was caught in a dense fog over the valley between Cleveland and Akron, Ohio. I was forced down because I didn't want to crack up the ship or take undue chances on the mail.

"The weather was so tight that I had to run up and down the valley for several minutes before, in a momentary rift in the vapor, I discovered what appeared to be a field, large enough and smooth enough to sit down in. As I was about to settle, a big ditch suddenly appeared before me. I was able to jump it and just then received my thrill when the only rail fence in that part of Ohio loomed up just ahead, so close that I couldn't set the plane down or, by speeding up, quite clear it.

"There was a terrific crash as my undergear struck the fence and I was convinced that my landing gear had been carried away. Instinctively I cut the switch and there flashed through my mind all sorts of unpleasant pictures of what was going to happen when I landed without running gear. I was surprised and chagrined when the plane made a beautiful three-point landing, rolled through a field scattering shocks of corn as it advanced, then came to rest a few feet from a farmer's back door. The loose construction of the fence had saved the plane.

"It was a surprise both to Major Cone and to me to find ourselves once more in the same organization. I had been at headquarters only a few days when he flew in to take charge of sales. Needless to say, I am delighted to be working under my old boss once more, the man who has done more for me in an aviation way and personally, than anyone else."



Pioneering the Southwest Airways

Development of N. A. T. Lines in the Southwest As Told to W. T. Owen

By Chas. B. Braun

District Commercial Manager, National Air Transport, Dallas

IN THE ordinary sense, the term pioneer brings to mind an enfeebled individual whose mind dwells continuously upon the accomplishments of earlier days. But in commercial aviation, events have transpired so rapidly that the pioneer well may be an individual or organization full of youthful vigor and constantly urged to greater accomplishment by the vision of what may be brought to pass in the field of air transportation by the exertion of the proper effort.

Strictly in the latter sense must be interpreted anything I have to say relative to the pioneering of the Southwest by the National Air Transport. A little less than four years have elapsed, according to the ordinary computation of time, since N. A. T. began making aeronautical history in Texas and Oklahoma. But, in terms of advancement, generations have passed over our heads.

Seldom, indeed, may the active worker in behalf of the aviation industry lay aside the work of today and the vision of tomorrow, to indulge in the retrospective view of yesterday. There is a continual urge toward the future, an ever-increasing vision of what flying will mean a little later. And I say "a little later" advisedly, for who could have foretold the marvelous progress of the last four years at the time that the company I represent entered the field. True we dreamed, all of us, just as we dream now of the future; and, as we worked then to make our dreams come true up to the present point of progression, we must continue to work and hope for the future.

The National Air Transport was organized by a group of air enthusiasts residing in Chicago, Cleveland, Detroit and New York, somewhat prior to the passage of the Kelly Bill, which in 1925 authorized the government to contract for air mail routes.

In organizing this company, two purposes were held by its founders. One was to bid upon the carrying of air mail; the other, more altruistic, was based upon the belief that the time had arrived when some group in the United States should bestir themselves if aviation was to survive for anything save strictly military purposes.

Of the approximately eight air mail contracts awarded under the Kelly Bill, N. A. T. was awarded the one known as C. A. M. Number Three, between Chicago and Dallas. However, it was not until May, 1926, that actual flying of the route could be undertaken.

The Southwest, air-minded to a certain extent even then, if we may consider the minds of a few civic leaders as reflecting a community spirit, came forward with the most splendid assistance. The N. A. T. was given every form of aid by the Chambers of Commerce and other organizations in the sections traversed by the projected line. Dallas, being the terminal, and Oklahoma City the largest city on our intermediate route, were called upon for more than the others and gave their help most generously. At Dallas this took the form of a hangar at Love Field and free office space for our representatives. A group of 115 business firms underwrote a guarantee of 100 pounds of air mail daily. Oklahoma City built a hangar for us. Fort Worth gave generously everything we asked.

Everything was a gamble then on the part of the operators of the route. This fact was stressed by us and the people, while the mass of them hardly knew at the time what it was all about, rallied willingly to our help and gave to the limit of their ability. Too great stress cannot be laid upon this assistance, for without it, our pioneering efforts undoubtedly would have ended in failure. Organizations such as the chambers of commerce formed committees to help out by distributing to business houses as well as individuals, literature telling about the air mail, helping us sell the idea to the public. Two of these committees still are in existence, one in Oklahoma City and the other in Ponca City, Oklahoma. Due credit must be given the employed staffs of every Chamber of Commerce for their aid, while in most communities there were small groups of air enthusiasts, generally composed of veterans of the war-time air service, who placed behind us their personal assistance in every form that they could conceive of.

Dallas, proud of its status as the southwestern terminus of the Chicago air mail line, insisted through its Chamber of Commerce, the post office and other public and civic organizations, on holding a proper dedication ceremonial for the hangar and the first

ship. A Curtiss Carrier Pigeon, now somewhat of a curiosity but then the last word in aerial efficiency, was the ship dedicated. From a platform directly in front of the bunting-draped ship, a crowd numbering several thousand persons, on May 6, 1926, heard addresses by Harris M. Hanshue, president of Western Air Express; Col. Paul Henderson, vice president and general manager of National Air Transport; John W. Philp, then postmaster of Dallas and now fourth assistant Postmaster General, and others. They had a dedication that was a dedication, which was widely written about in the daily press, but which was six days ahead of the departure of the ship with the first consignment of mail ever to travel by air from Dallas to Chicago.

Our original schedule from Dallas to Chicago called for one flight daily each way, or approximately 2,000 miles. The old Curtiss Carrier Pigeon ships were

Putting the first air mail aboard the Carrier Pigeon. Pilot Herbert Kindred in the cockpit

used. Later the schedule was changed so that we could operate at night with a greater saving of time to our patrons and when the night run was started, day flying was abandoned from Kansas City south.

Our job, and I had joined the organization in June 1926 and therefore may speak from personal experience, in pioneering the Southwest was to create business for the N. A. T. and at the same time get the people to think of aviation as a utility and not a stunt or fad. The difficult part of our work had been to get the public to think of an air transport line as an integral part of the transportation facilities of the country.

At the outset, I was placed in charge of this district. I had three solicitors working under me in Dallas. We also had another man in Fort Worth and, while our line did not extend south of Dallas, we had still another solicitor in Houston to create interest there.

In order to interest the chambers of commerce, I attended the annual meeting of their secretaries in 1926 at Lubbock, Texas, and made a talk in which I tried to get them to see the picture of aviation as I saw it, in conjunction with the development of the Texas of the future. This was an entering wedge that has been of great assistance since that time.

Another branch of my work has been to obtain from the newspapers and magazines published in the Southwest all the support that I could contrive. And right here I should say that, since the first, our company and aviation in general has been dealt with most generously by the press of the Southwest both in handling news and doing the most splendid sort of propaganda for commercial flying.

My work called for visits to a great many cities in Oklahoma and Texas and numerous appearances before public gatherings, luncheon clubs and the like, to talk on commercial flying; also to contact the newspapers in each town.

On one three-week trip into Oklahoma arranged for me by the Oklahoma City Chamber of Commerce before Lindbergh had awakened the public imagination by his superb flight to Paris, I appeared in one place at a gathering sponsored by the American Legion. The chairman of the night in introducing me to the audience, certainly did not help me put over my story when he looked at me fixedly and declared, "I know who he is but I can't tell you why he is here or what he wants to talk about."

In another small place, on that trip, the meeting was scheduled to be held on Prayer Meeting Night. I write the term in capitals because that is the importance laid upon this weekly event by the people of the town. At any rate, in spite of a lot of advance ballyhoo, the hour for our meeting arrived with nobody in the hall except the secretary of the chamber of commerce, the janitor and myself.

Contrasted to this, the memory of a few places stand out pleasantly. For instance, at Altus there were 400 people present and a lot of enthusiasm was shown for aviation. Mostly, though, it was a case of plugging along, talking aviation and the N. A. T. whenever and wherever I could get together an audience. Tons of literature were distributed in the two states with the aid of the commercial organizations and the post office employes.

In April, 1927, a long distance call came to me from Austin, asking me to come there, to attend a special meeting of the board of directors of the chamber of commerce. Upon arriving I found the board gathered in a night meeting, anxious to learn what procedure should be followed to get on an air mail line. I was bombarded with questions for an hour. I advised them to get San Antonio and Waco interested and present a joint petition to the postmaster general asking him to designate the line and advertise it.

From Austin, I went to San Antonio and outlined to Secretary Porter Whaley of the Chamber of Commerce the proposition I had put before me. At first Mr. Whaley was not much stirred, but as we talked he became enthused and immediately got busy creating public sentiment for the line.

W. Irving Glover, second assistant postmaster general, in charge of the air mail, was in Texas attending the postmasters' convention in Wichita Falls on May 20th. He was met by large delegations repre-

(*Continued on page* 24)

The Backstage of Aviation is

The Flying School

By Oliver L. Parks

Oliver L. Parks, vice-president and general manager of Parks Air College Division of Detroit Aircraft Corporation

COMMERCIAL aviation today may be compared to a major league baseball game or to a stage drama being played before a critical public. Just as the participants in the game or drama function with clockwork precision, so does commercial aviation present a finished and efficient outward appearance to the eye of the public. It is to be remembered, however, that months and even years of hard work and preparation in the background were the factors in carrying off the performance to the satisfaction of the spectators.

When a flashy ball player pounds out a home run or makes an outstanding play in the field, the crowd voices its approval quickly but at the same time little thinks of the background of training that made the performance possible. When an actor in the drama moves the audience with a brilliant display of talent, the years of peparation he has put in are forgotten.

Aviation is in much the same category today. With each outstanding performance in aviation, the public becomes more receptive to the industry and it is but a matter of time until the public will favor the business with its wholehearted support. When this time comes, however, I will venture to say that if you ask your enthusiastic neighbor what has been behind the remarkable growth of aviation, he will be at a loss to describe the backstage of the business.

The air line operators are certainly to be commended for their pioneering work which is rapidly placing aviation in the public eye as a commonsense form of transportation. Everyone is constantly kept in touch with the developments of the air lines through the newspapers, magazine editorials and the like; but to my mind, the backstage of aviation should also be impressed upon the public through every possible means. It is only a thorough "from the ground up" education that will breed confidence and participation in aviation.

And that brings us down to the question, "What is the backstage of aviation?" Of the many departments comprising commercial aviation, the manufacturing and flying school divisions are outstanding in size and purpose. The manufacturer, of course, furnishes the industry with tools and equipment with which to work. The flying school as a generality molds the personnel. As this article is to stress the place of the flying school in commercial aviation, I will concede a recognition of the other departments and pass on to the function of the modern aviation school.

Much has been said about the safety and consistency of air line operation. It has already been proven that structural defects cause only a fraction of the accidents in aviation today. The fault, therefore, must lie with the operators of the aircraft themselves. This does not mean that our pilots are not capable and efficient in their work but that some important detail of their aviation training was slighted. It is the flying school today that is assuming the responsibility of teaching pilots the essential subjects that contribute to safety and good judgment, and is thus eliminating the element of human error that resulted in the past from unorganized and inefficient training methods.

Air College instructor checking a student's log book

It is conceded now that there are many more things entering into the education of a pilot than the use of an airplane and an instructor.

Hours in the air are merely a part of the training now required of a flying school student. He must also know aircraft engines, the structure of airplanes, must be weather wise, have a working knowledge of radio, in fact must know about more subjects than would be practical to mention at this time. If the personal reference may be overlooked, I might mention a few of the subjects that a flying student receives at Parks Air College.

The usual run of meteorology, navigation, aerodynamics, and the like is required of each student, but it is at this point that the student receives the additional training that will stamp him a competent and efficient pilot. For example, the radio is assured of a major place in air line operation. Accordingly, the student is trained in the transmission and reception of code messages, the operation and principles of aircraft radio apparatus such as the radio compass and beacon, the principles of electrical circuits as applied to aviation radio, etc. Then, too, he recieves practical instruction on airplanes and power plants that broadens the theoretical knowledge gained in the classroom. All in all, the graduate of a modern aviation school is fully versed in the subjects which contribute to the safe and efficient operation of aircraft.

Public Should Know Schools

For this reason, it is essential that the public should be educated to the existence and operation of flying schools and be given a glimpse of the backstage atmosphere of this great business. I personally hold, just as everyone else probably does, that it is a comfortable feeling to realize, upon preparing for an air journey, that the man at the controls has that atmosphere of confidence and ability that results from the proper training. And it is a still further satisfaction to be somewhat familiar with the procedure that was followed in the training of "the man in front," even though it may be a sketchy knowledge.

To sum up the whole situation, the purpose of the flying school is to turn out pilots of ability and good judgment in whom the public and the air line operators can place supreme confidence. Flying schools are therefore without a doubt one of the greatest contributing factors to the advancement of commercial aviation and their fundamentals and ideals should be placed before the public, honestly and persistently, always.

Pioneering in the Southwest Airways

(*Continued from page* 22)

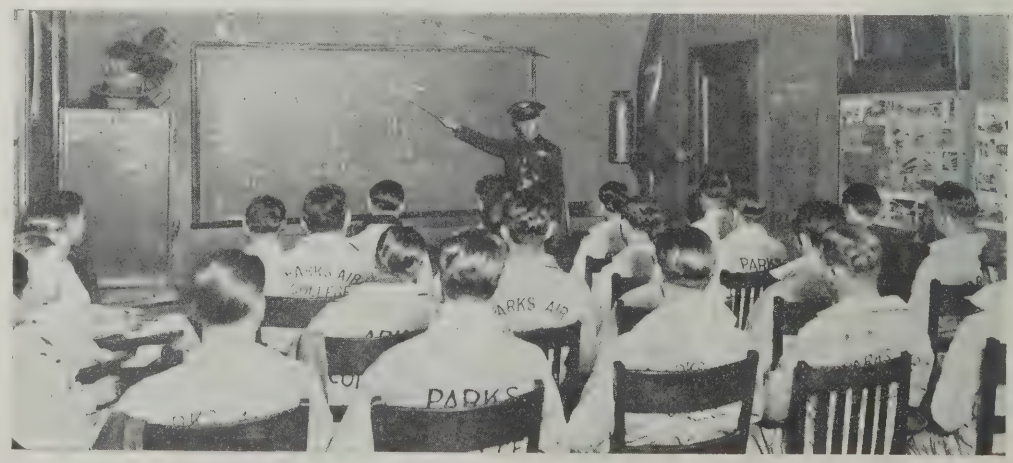
senting San Antonio, Austin, Waco and Houston. That same day Lindbergh hopped off for Paris and in the general wave of enthusiasm that followed everything went easier for the advancement of aviation in Texas. Mr. Glover's report to the postmaster general was favorable and several weeks later the two lines were advertised. One went from Dallas, via Fort Worth, to Houston and Galveston. The other went from Dallas via Waco, Austin and San Antonio. The Texas Air Transport was organized at that time in Fort Worth and was successful in its bid. This line is now part of Southern Air Transport.

On July 5, 1928, a line was started via Ponca City to Tulsa, hooking up with the N. A. T. night run between Dallas and Chicago, thus giving Tulsa the air mail. On July 1, 1929, we extended the day line south from Kansas City to Fort Worth and Dallas, via Tulsa, instead of the night line, via Wichita Kan., Ponca City and Oklahoma City. Thus, from an original 2,000 miles a day, the N. A. T. has expanded to over 4,000 miles flown daily with both day and night service between Dallas and Chicago. Having taken over the line between Chicago and New York and incorporated this in its system on September 1, 1927, ours has become one of the great flying systems of the nation. In Chicago we maintain our central terminal and repair depot.

From the Carrier Pigeon we went in for Travel Air cabin planes, experimenting for a short time with passenger carrying. After about one month we abandoned this plan for the time and switched to Douglas ships. Later we concentrated on Douglas ships on the eastern run and now use Curtiss Falcons for the fast mail ships on the southwestern run.

For the first two years of our operation in the Southwest the sledding was tough, as it was hard to get the public to think of travel or mail service in terms of the air. In consequence we lost a lot of money.

I am glad to say that conditions are looking brighter for us all the time and business is coming our way rapidly. The volume of mail carried is showing a very heavy increase each year.



A class receiving rudimentary instruction in motors

Stearman dusting planes in action. Thousands of acres can be dusted daily

The Development *of* Aerial *Cotton Dusting*

By Leon Booth

WHILE the United States Agricultural Department first developed airplane dusting of cotton and other crops infested with insects, it has been left to the private commercial organizations to come to the actual rescue of the farmers and afford weevil protection. Such an organization is Wings, Inc., of Shreveport, Louisiana.

This organization, while primarily engaged in crop dusting, also engages in all other forms of commercial aviation and operates one of the finest airports in north Louisiana, known as Texaco Airport. Wings, Inc., is one of the first cotton dusting organizations in America, or at least, is the neuclus of one of the first organizations. Included in its personnel is W. Currie Sanders and M. L. Alexander, who have the distinction of probably having dusted more cotton in North and South America than any other pilots in the United States. Their experience began when they were members of that old pioneer cotton dusting company known as Huff-Daland Company, a subsidiary of the Keystone Aircraft Corporation, builders of the Patrician.

That the southern commercial aviation companies have the advantage over their northern contemporaries in more ways than weather, is indicated by the cotton dusting activities of a large number of the southern companies.

Back in 1891 the Ohio State Agricultural experimental station conducted tests in the use of lead arsenate in an endeavor to poison the larvae of the catalpa sphinx, which was defoliating the groves of the state. The astonishing tests in the exterminating of these pests led to the southwide use of arsenate in poisoning the boll weevil.

Shortly after the World War the United States Army loaned several pilots and planes to the U. S. Agricultural Department to conduct tests in the Federal experimental station at Tallulah, La., under the direction of Dr. R. B. Coad. Dr. Coad has spent the major part of his life in studying methods to protect farmers from the boll weevil and other insect infestations of crops. With the planes and the pilots at his disposal he immediately set to work in an effort to make cotton dusting by airplane practical. The army DH's were converted from observation to cotton dusting planes. Hoppers were installed and the best methods of distribution of dust from the air were studied.

Dr. Coad's work was entirely satisfactory. He and his assistants proved to themselves and the farmers the advantages of dusting cotton by airplane. About that time the Huff-Daland Company, of Bristol, Penn., became interested in the cotton dusting business and built a number of planes in the Bristol factory known as Huff-Daland Dusters or Puffers. Headquarters were established at Monroe, La. This company was operated successfully for a number of years and was disbanded only two years ago when the Huff-Daland officials centered all their interests in the Keystone Aircraft Corporation.

The Southern Dusting Company, Inc., of Tallulah, with Captain Eugene Stevens as operating manager, also was formed several years ago with a number of large cotton planters as owners. It has been operated successfully since its organization by Captain Stevens, a graduate of Kelly Field.

Several years ago Colonel Howard F. Noble, of Culver Military Academy, visited Shreveport and became interested in the future of aviation and cotton dusting. About that time Sanders and Alexander, together with Conway Allen, prominent aviation worker and pilot in Shreveport, came together for the purpose of organizing a cotton dusting company. Sanders and Alexander had been dusting in the southern states in the summer months and in the winter months here they they would journey to Peru, where it was then summer time, for the dusting season. They were members of the Huff-Daland

Planes on the line ready to take off for a day's dusting operations

organization, which was doing a big business in the South American Republic.

The organization of Wings, Inc., was perfected with Colonel Noble as president and manager. Several of the largest planters and bankers in North Louisiana are included in its directorate. Colonel Noble looks after the business management, Alexander and Sanders are pilots, and Allen goes after the business. During the cotton season the company employs entomologists to work with the farmers and assist them in caring for their cotton.

Five facts are cited as being advantageous to the farmer to use airplanes for cotton dusting. They are:

1—Plane dusting affords a saving of from fifty to sixty per cent in the amount of poison required to produce the same effect by any other method of distribution.

2—Airplane dusting can be carried on in daylight without the necessity of the plant being wet with dew, thus eliminating night labor.

3—Dust can be applied immediately after heavy rains, when it is most needed (the weevil multiplies rapidly after rains) and when the horse drawn dusters cannot enter the fields.

4—Weevils multiply rapidly when a field becomes infested and speed is of paramount importance in dusting. Airplanes can dust from 500 to 1000 acres of cotton per hour, depending on the openness of the field, while the best ground machines dust only about 30 acres per day or night.

5—Results indicate that the planter who consistently poisons by airplane increases his cotton production by 33 per cent over the ground labor dusting and at the same time has no investment in poisoning machines, labor, etc.

Wings, Inc., use Stearman C3B's powered with Wright J5 225 horsepower air-cooled motors. Hoppers have been installed in the forward cockpit capable of holding 500 pounds of poison, which is distributed in 12 minutes, when an adjacent landing field is used. The farmer furnishes his own poison and the plane distributes it for him. Four dusters are used by Wings with a pilot, mechanic and entomologist for each plane.

Dusting planes must fly very low

At the beginning of the season each pilot is assigned a plane and he and his assistants are responsible for a certain unit under contract for dusting. Dusting contracts are usually signed by the farmers shortly after the cotton is planted. The dusting season usually begins in June and sometimes lasts to September.

The pilots generally do the dusting from daybreak to about 10 o'clock in the morning, lay off until about 3:30 or four o'clock in the afternoon, and then dust until dark. They stay on the plantations where they are dusting and return to their operating base, only when repairs are necessary.

Dusting cotton is naturally a somewhat hazardous type of flying. It is necessary to speed over the cotton at open throttle and zoom at the end of the field, sometimes barely missing a house, tree or other obstacle. Dusting pilots must be among the most skillful and capable in the business.

The speed of the airplane causes the dust ejected from the hopper to be charged with electricity. The static electricity gives the dust adhesive properties which are only neutralized by rain.

After the cotton dusting season Wings mechanics at the general headquarters are immediately put to work under the supervision of an expert rigger and airplane mechanic as well as motor expert. The planes are completely overhauled from motor to rigging. The hopper is taken out of each one and a passenger cockpit installed. Wings then centers its major operations on student training, taxi work, aerial photography and the operation of Texaco Airport. With such diversified activities the companies engaged in cotton dusting are said to be making satisfactory profits where others in many instances are having difficulties in breaking even.

Among the companies in this field of aviation which are known to the writer are Wings, Inc., Shreveport, La.; Southern Dusting Company, Tallulah, La.; Delta Air Service, Monroe, La.; and the various Curtiss-Wright branches in the South which are now dusting cotton in addition to their regular line of work.

News of the Southern AIRPORTS AND AIRWAYS

Plans for Fort Worth Airway Station

THE aviation passenger station and office building to be constructed at the municipal airport in Fort Worth, Texas, under improvement plans financed by a half-million dollar bond issue, already voted, is shown in the accompanying illustration. Contract has been let for the fourth hangar at the port, bringing the hangar investment to around $120,000.

The station and office building, designed in accordance with plans of William G. Fuller, field manager, will be a composite structure of three stories, with over-all dimensions of 245 by 130 feet.

The structure will consist of three joined units, one comprising offices and passenger accommodations, one a passenger loading shed, large enough to take care of the largest commercial planes now in use or contemplated, and the third a service building.

In the office building and station structure there will be a 32 by 64-foot waiting room on the ground floor, a restaurant 30 by 48 feet, and telegraph, ticket, pilot registration and field manager's offices, rest rooms, baggage, mail assorting rooms and an airport post office. On the second floor there will be 15 offices to be rented to aviation companies, and showers for men and women pilots. A weather bureau is provided for on the third floor.

Passengers will be admitted to the loading platform only after displaying tickets.

In the service building, on the field side of the architectural assembly, there will be housed, in addition to gasoline and oil dispensing devices, an ambulance and fire apparatus on the ground floor, an airplane dispatchers' office on the second floor, a power control room on the third and a beacon on the roof.

Southwestern Air Travel Increases Steadily

Air transportation has more than doubled over the lines of the American Airways, Inc., operating out of Dallas, since the reduction of air travel costs in January. The exact increase for the first month was 216 per cent over the previous thirty days business of the system, according to announcement by P. D. Lampert, assistant operations manager for American Airways, Inc., at Love Field. March traffic also showed a large increase over the month of February. Mr. Lampert states that the Dallas to Cleveland line is contributing most of the new business.

Mr. Lampert's statement further said: "A factor in the increase, in addition to the low rates, has been found to be inauguration of the fast through service with tri-motored planes between Cleveland and Dallas, and a third daily schedule on the Boston-New York run."

"The experience of the company with the Cleveland-Dallas line has shown it to be the most heavily traveled long-distance air route in the country and that the Middle West and the Southwest are the most fertile fields for air passenger traffic."

Atlanta-Birmingham Rates Reduced by Davis

Rates on the Davis Air Lines between Birmingham, Anniston and Atlanta were reduced 20 per cent on April 18. The new rates are as follows: Between Birmingham and Atlanta, one way, $12.00; or round trip, $20.00. Between Birmingham and Anniston, one way, $5.25; or the round trip, $9.00. Between Anniston and Atlanta, one way, $6.75; or the round trip, $11.00.

Summer schedules now in effect call for the departure of planes from both Atlanta and Birmingham at 4:30 p. m.

On May 15, the Davis lines will be extended from Atlanta through Augusta, Savannah and Brunswick, to Jacksonville. On this route, planes will depart from Atlanta at 9:30 a. m. and arrive at Jacksonville at 1:00 p. m.

With the inauguration of the Atlanta-Jacksonville line, the last link in the transcontinental system will be composed of the Davis Air Lines from Jacksonville to Birmingham, via Atlanta; Delta Air Service from Birmingham to Fort Worth; Southern Air Transport from Fort Worth to El Paso, and Standard Air Lines from El Paso to Los Angeles.

Southern Air Transport passengers, eastbound from El Paso, order their luncheon in Big Spring and eat it in Sweetwater, 65 miles away. The trip takes 40 minutes. Ordering is handled over long distance telephone by employes of the company.

Architect's drawing of the new airways passenger station and office building to be built at Forth Worth.

Growth of S. A. F. E. Lines Shown in Report

THROUGH its president, Erle P. Halliburton, the Southwest Air Fast Express, made public its record for the first year of operation, April 1, 1930.

In the report, Mr. Halliburton stated that a total of 934,649 miles were flown and 25,654 passengers carried by its fleet of ten tri-motored Fords.

Southwest Air Fast Express planes fly from St. Louis through Springfield, Mo., to Tulsa, Okla.; from Kansas City through Chanute and Coffeyville, Kansas, to Tulsa. At Tulsa these planes connect with a plane from Tulsa through Oklahoma City, Wichita Falls, Abilene, Sweetwater and Big Spring, Texas, to Midland, Texas, and from Tulsa to Fort Worth and Dallas Texas.

In addition to these regular schedules, morning and evening planes are operated both ways between Tulsa, Oklahoma City, Wichita Falls, Fort Worth and Dallas. Twelve planes arrive and depart from Tulsa each day; and in addition to the ten 14-passenger tri-motored Ford planes powered with 425 h. p. Pratt and Whitney Wasp motors, this company operates three Wasp-motored 4-passenger Lockheed cabin planes from Tulsa on charter trips.

Daily service began on April 2, 1929, flying from St. Louis to Tulsa, Kansas City to Tulsa, and Tulsa to Oklahoma City, Forth Worth and Dallas. The total number of employes was about fifty, which included the eleven pilots. On April 1, 1930, 3,790 miles were being flown daily by ten tri-motored 14-passenger Ford planes and the number of employes had increased to over one hundred, which includes thirty pilots. The payroll for April, 1929, was about $8,500, which the monthly payroll now exceeds $25,000. During the first month of operation 223 passengers were carried and during March, 1930, 4,313 passengers were carried.

Property owned by the S. A. F. E. Lines now reaches a value of nearly one million dollars. At its headquarters in Tulsa the company owns a $150,000 building which combines hangar, shops and general offices. Machinery and tools and parts represent an investment of over $80,000. Aerocars, automobiles and trucks cost nearly $25,00.

With its operations centered in Tulsa the Southwest Air Fast Express feels that it has the most economical set-up of any line operating in this country. This, in addition to the fact that stock is not for sale to the public and that no promotion charges have ever entered into its operations, make it possible for this air line to operate most economically.

The S. A. F. E. Lines has a hook-up with nearly all the railroads throughout the Southwest.

During 1929, all air lines were hauling few passengers, with fares ranging from 10 cents per mile up, nearly all losing heavily and making little progress. It was not known whether growth was retarded by fear on part of the traveling public or whether it was due to the high rate of fares charged. On December 15th, 1929, Mr. Halliburton announced that he was going to find out "whether the slow increase in the growth of air passenger traffic was due to fear or high fares; and that effective January 1, 1930, fares on all lines of the Southwest Air Fast Express would be reduced to 5 cents per mile." The first two days of January proved the wisdom of this policy. The number of passengers increased from 1,009 in December to 4,313 in March, 1930. Since January 1 nearly all air lines in the United States reduced fares to approximately the same level and their traffic has also increased proportionately.

It is well known that the present low rates cannot be continued indefinitely, at the present cost of equipment and cost of operation of planes now in use. It has also been conclusively demonstrated that the only way to insure a large volume of traffic is through low fares, comparable with rail and pullman charges. Airline operators cannot continue to lose heavily as they now are, indefinitely.

Average S. A. T. Pilot Has 3,315 Hours

THE average pilot employed by the Southern Air Transport division of American Airways, Inc., is 28 years old, has been flying eight years, has accumulated 3,315 hours in the air, and covered enough distance to circle the world eleven times. These facts have been arrived at through statistical records compiled by Jerry Marshall, operations manager. Individual records show the ages of the pilots ranging from 25 to 39 years. Total hours of the thirty-two pilots employed by the company is 106,100 hours, or long enough to fly around the world about 397 times.

Insurance Policies for Mexican Passengers

Accident and life insurance policies for passengers are being given with transportation tickets by Compania Inter Americas de Transportes Aereos on its Arriaga and Tapachula passenger and mail service in southern Mexico. The policies protect the rider to the extent of $10,000 against a fatal crash. Pilots on the route are protected by like policies. During the time of its operation there has not been a fatal crash or an accident of any kind on this service.

This enterprise is making arrangements for the establishment of airports at the City of Vera Cruz and Orizaba, state of Vera Cruz, in preparation for services which it will soon conduct from Mexico City to Southeast and Southwest Mexico. A route for passengers and mail will soon be inaugurated between Mexico City, Orizaba, Vera Cruz City, Tierra Blanca, Tuxtepec, San Jeronimo, Oaxaca City and Arriaga.

Air Mail and Express on N. A. T. Lines

Air mail and express carried during March by National Air Transport planes operating between Dallas and Chicago and Chicago and New York totalled 171,969 pounds, or 19,206 pounds more than was carried in February. During the first quarter of 1930 National Air Transport planes carried 462,427 pounds of mail and express, which is an increase of 24,854 pounds over the corresponding period in 1929.

Beaumont Hangar Leased by Gifford Flying Services

The Gifford Flying Services, owned by Chester Gifford, has signed a lease on the Beaumont, Texas, municipal hangar, and is making a number of improvements in the services.

Mr. Gifford has been appointed field manager and is directy charged with directing both air and ground traffic, field inspection and field reguation enforcement.

Fred Myers continues as weather observer and dispatcher. He operates a lunch stand at the field for the convenience of visiting pilots, operating the concession in connection with his duties as weather observer.

Dedication of Columbia Municipal Airport

ATTENDED by noted flyers from many states and famous personages from South Carolina and adjoining states, the Columbia, S. C., municipal airport was formally opened with a two-day program April 24 and 25.

The field was christened Owens Field in honor of Mayor L. B. Owens, who led the long fight for its establishment.

Fliers who participated in the races and other contests during the two-day ceremonies pronounced the field as one of the best in the South, and one that offered excellent possibilities for future development.

The field has been leased by the Curtiss-Wright Flying Service, who will offer the state a complete aerial service.

The opening address during the dedication program held on the first day of the meet, was made by Governor Richards, who welcomed the visiting airmen in behalf of the state, and praised the city of Columbia for taking the lead in aviation development in South Carolina.

Mayor Owens in a brief speech, following that of Governor Richards, said that the assemby was the most distinguished ever to gather in Columbia. He thanked the citizens who had worked with him in making the field possible, and thereby bringing Columbia in closer contact with her sister cities.

The dedicatory address was made by State Senator James H. Hammond. Jane Todd, a small granddaughter of the governor, broke a bottle of gingerale in christening the field.

"This is a memorable date in the history of the South," said Casey Jones, president of the Curtiss-Wright Flying Service, who spoke during the dedication. "While the South has been a little backward in aviation development, it is now awakened and is able to profit by the mistakes of more pioneering sections. Curtiss-Wright is going to make Columbia one of its headquarters in flying service, and due to the location of the city in addition to its wonderful field, Columbia will be able to take advantage of the air industry which is rapidly developing."

The meet was directed by F. William Cappelmann, general chairman of the committee, which worked under the Chamber of Commerce in planning the two-day meet, and Major Luke Christopher, representative of the National Aeronautics Association. The program was carried out with dispatch and the committee was highly praised by visiting fliers for their proficiency in this respect. Karl Voelter was official timer for the races. Ty Cobb, famous Georgia baseball player, was introduced to the crowd as was Elliott White Springs, famous South Carolina war ace and author.

Cash prizes totaling over $2,500 were given the winners in the various contests held each day. For the

Planes on the line at the dedication of the Columbia, S. C. municipal airport April 24 and 25. In the oval at left is Governor Richards, and the center is Jane Todd, his granddaughter. On the right in the oval is Mayor Owens, for whom the field was named. Below is the Curtiss-Wright hangar and a portion of the crowd

fliers of the army air corps, the navy and United States marine corps, handsome trophies and watches were presented the winners in the special events held for service planes.

Crowds estimated at between 15,000 and 20,000 attended the races each day. The meet was praised by visiting flyers as one of the best held this season. It was sanctioned by the National Aeronautics Association, and the Federation Aeronautic Internationale. Approximately one hundred planes took part in the meet at some time during the two days.

Six races and contests were on the program each day. The army, navy and marine corps were represented by squadrons from southern bases.

The Shell Mystery Ship, piloted by James B. Haizlip, of the Shell Petroleum Company, was one of the outstanding features of the meet.

The meet was closed with a banquet at the Jefferson Hotel at which cash prizes were awarded to civilian pilots and trophies presented to service flyers.

Casey Jones, who was winner in one of the speed events on the second day, said during the banquet: "This is the best airport that I have landed on in the South. The meet attracted some of the fastest and best planes in the country, and was 100 per cent perfect."

Elliott White Springs, Major Luke Christopher, Captain Muse, of the Army Question Mark, Art Davis, winner of second place in the Ford reliability tour, Karl Voelter, chief timekeeper, Lieut. Don Smith, of the Navy, and Douglas Davis, of Atlanta, made brief speeches during the banquet.

Many of the participants in the meet flew over to Sumter, S. C., where they participated in the dedication of the Sumter airport on April 26.

Municipal Airport Opened at Troy, Alabama

Twelve planes participated in the opening of the Troy, Alabama, municipal airport, which was dedicated April 9 and 10.

Governor Graves and several other prominent Alabamians, including Adjutant General F. E. Butler, were present at the dedication.

Naval planes from Pensacola and Army planes from Maxwell Field, Montgomery, and Roberts Field, Birmingham, took part in the dedication. The tri-motored Army plane, Question Mark, from Maxwell Field, and a Ryan cabin monoplane piloted by Bob Bauman, sales manager of the Ryan Aircraft Corporation, also were present.

The whole field is available for use, but runways 2,500 feet in length are provided for the heavier cabin planes. A concrete circle marks the center of the field and concrete strips designate the ends of the runways. The field is located two and a half miles south of Troy.

Selection and development of the field was carried out by a committee composed of Mayor Walters, W. P. Young, Charles Brantley and S. E. Mary who were aided and advised by Major W. R. Weaver and other fliers from Maxwell Field.

Tentative Schedules for New N. A. T. Passenger Lines

Tentative schedules for National Air Transport's 140-mile an hour passenger service between Chicago and New York and Chicago and Dallas were announced recently by Col. Paul Henderson, vice-president, and Lester D. Seymour, general manager, of N. A. T.

The eastbound plane will leave the Chicago airport at 10:30 a. m. and arrive in New York at 5:50 p. m., a total of six hours and 20 minutes for the 730 mile trip, including stops at Toledo and Cleveland at 1:35 and 2:35 p. m., respectively. On the westbound schedule the plane will leave New York at 1:20 p. m. and arrive in Chicago at 7:00 p. m. Intermediate stops will be made at Cleveland at 4:55 p. m. and in Toledo at 5:55.

The tentative schedules for the new passenger service on the N. A. T. line between Dallas and Chicago call for departure of a plane from Dallas at 10:15 a. m., with arrival in Kansas City at 2:30 p. m., and in Chicago at 6:00 p. m. Complete schedules for the southwest line have not been worked out, but will be announced later, according to N. A. T. officials.

Vero Beach Airport is Named "Silvertown"

Because of the liberal gift of James D. Tew, president of the B. F. Goodrich Company, which made the new airport at Vero Beach, Florida, possible, citizens have voted to name the airport "Silvertown" for the famous commercial speed ship "Miss Silvertown," the plane that won six world records at Jacksonville Beach in February. Goodrich sponsored the flights that annexed these records for American aviation. Mr. Tew broadcasted a brief address at the opening of the airport.

New Radio Station at Sky Harbor

A NEW addition has been made to the growing network of airway radio stations in the United States with the completion recently of a weather collecting and broadcasting station at Tennessee's Sky Harbor, Nashville's air mail stop, according to officials of Interstate Airlines, Inc., owners of the Sky Harbor airport.

Inspectors of the Bureau of Lighthouses, Airways Division of the Department of Commerce, who have inspected the station, stated the building erected at the Nashville airport and equipment installed under supervision of Radio Operator James E. Wollon was in accordance with all regulations concerning the operations of such a station at that point on the Chicago-Atlanta mail routes operated by Interstate Airlines.

The station operates on a frequency of 350 kilocycles. Using both day and night frequencies, the station is expected to be kept in operation both day and night, since planes operated by Interstate on present schedule, fly the Chicago-Atlanta and Evansville-St. Louis routes by night and a shuttle line in daylight between Nashville and Atlanta.

Night frequency of the Sky Harbor is 3,350 kilocycles, while the day frequency is 5,960 kilocycles, officials said. Equipment includes a weather broadcasting set which will be used for sending voice messages to pilots flying the routes, while a radio telegraph set will be used for collecting weather and other important information.

Instruments making up the radio station at Sky Harbor include a 150-watt combined radio telephone and telegraph set, one 500-watt high frequency, crystal-controlled telegraph transmitter, one high frequency receiver, one intermediate receiver, and one battery cabinet with a distribution board, which at present has been wired for eight "A" batteries and 12 45-volt "B" batteries.

The radio station building measures 22 by 52 feet in dimension, in one end of which is a room set aside for a Squash court to be used by employes of the Sky Harbor airport. The radio room is 13 by 19 feet in dimension, with a store room adjoining which measures 6 feet by 19 feet, for radio accessories and supplies. In addition, there is a room upstairs which probably will be used as a sleeping room, officials said.

Waycross Airport Opened With Air Meet

THE Waycross and Ware County, Georgia, airport was opened with a two-day air meet, April 21 and 22. The meet drew an estimated crowd of 20,000, including many well-known fliers from the southern states.

Beeler Blevins, of Atlanta, directed the meet. Henderson Hallman, president of the Georgia chapter of the National Aeronautic Association, was the principal speaker at the formal dedication ceremonies on the opening day. Sponsors representing 20 Georgia counties took part in the opening day ceremonies.

More than 30 planes attended the meet. The prize money in the various contests was well distributed. The meet was well conducted and not marred by accident, though Joe Musleh, of Jacksonville, Florida, narrowly escaped death when his plane caught fire when taking off for the return journey to Jacksonville. He was saved by a 30-foot leap into ploughed ground when his plane was about to crash.

Delayed jumps and spot landings with a parachute were demonstrated by R. D. Ray and gliding demonstrations were put on by W. F. Barnswell, president of the Florida Glider Association.

Winners in the prize contests during the two days were as follows:

Fifteen-mile race for planes of 510 cubic inch displacement: First day, Joe Duckworth, first, Dick Statham, second, and Al Young, third; second day Dick Statham, first, Al Young, second and Joe Duckworth, third.

Bomb dropping contest: First day, Art Davis, first, Laurie Yonge, second, and Joe Bissonette, third; second day, Art Davis, first, Dick Statham, second, and Ben Stegal, third.

Spot landing contest: First day Carl Faulk, first, Art Davis, second, and Laurie Yonge, third; Second day, Al Yonge, first, Laurie Yonge, second, and L. Lloyd third.

Art Davis was high scorer of the meet. He won the free-for-all race for planes of all discriptions in the closing event of the meet. He flew a Waco 10. L. Lloyd was second and Ben Stegal third.

Gulf Hydroplane Service Formed in Mexico

A company of American and Mexican interests is being organized in Mexico City for the purpose of establishing a hydroplane passenger, mail and express service to operate on regular schedules between the City of Vera Cruz and Progresso, Gulf of Mexico port of the state of Yucatan. It is learned that a concession to conduct such a service will be asked soon of the department of aviation of the Ministry of Communications and Public Works and that orders for the air and water craft will be placed with factories in the United States. According to reports, four latest model hydroplanes will be used in the service.

The company, which will be known as The Gulf Hydroplane Transport Service, plans to make stops at the Gulf ports of Alvarado, Santecomapam (port of San Andres Tuxtla), Puerto Mexico, Frontera, Ciudad del Carmen and Campeche City. The backers of the enterprise contend that the service can be conducted at considerable profit and that the overhead will be light, as landing fields will not be necessary. The plan is to cover the 750 odd miles between termini in about seven hours flying time.

Air Mail Bill Will Aid Transport Lines

THE Watres air mail bill, basing rates on mileage and space instead of poundage, was signed by President Hoover April 29. Contracts will now be let by the Postmaster General based on definite weight spaces per mile, the rate not to exceed $1.25 per mile. The passage of the bill places air mail carriers under practically the same system as railway and ship carriers now operate under. It will enable the Postmaster General to revise routes, readjust rates, rearrange schedules, extend the service to sections of the country not now provided for and generally devise an air mail map that will better serve the greatest number. The bill also provides for carrying mail in passenger planes to the extent of 225 pounds which is expected to prove a boon to air transport operators.

The administration-terminal building of the Fairfax airport, Kansas City, Kansas, will be officially dedicated and opened to the public about the first of June. This building is recognized by aviation authorities and aviation architects as being the most complete and advantageously arranged airport terminal building in the United States. The dedication of the building will be marked with elaborate ceremonies.

New Eight-Hour Service Dallas to Chicago

Plans for an 8-hour passenger service betwen Fort Worth, Dallas and Chicago were announced the latter part of March by Colonel Paul Henderson, vice-president, and L. D. Seymour, general manager, of National Air Transport.

The inauguration of this service will put New York within 15 hours of Dallas and Fort Worth, and will be one of the fastest air passenger serviecs in the world, it is said.

The service will follow approximately the same route as now followed by the N. A. T. air mail planes, which have flown a total of over seven million miles during the four years operation over this route.

Planes to be used in this service will be capable of a cruising speed of 140 miles per hour and will be the ultimate in luxury and comfort, officials of N. A. T. state.

Air Passenger Service For Tyler, Texas

Tyler, Texas, will become a stop on the Birmingham-Shreveport-Dallas route of the Delta Air Service, as soon as the $50,000 airport is completed.

John Fox, traffic manager for the Delta lines, after a survey of the city's possibilities as a regular stop on the line, announced himself as being well pleased with the prospects.

Latin American Airways has discontinued sending its planes from Mexico City to Guatemala City, but this service is given by a hook-up with the Pan American Airways at San Jeronimo, state of Oaxaca. The passenger from Los Angeles may, therefore, continue to the Guatemalan capital by transferring at this point.

Intermediate field sites are being selected on the El Paso-Fort Worth airway by E. M. Height and H. S. Souther, of the Airways Division of Commerce. Several preliminary flights have been made and the general alignment of the airway has been determined.

Glenn L. Martin Co. Builds Flying Boat Terminal

Construction of the first of the concrete runways which will form part of the terminal of the Glenn L. Martin Company, aircraft manufacturers, of Baltimore, Md., has been authorized by Mr. Martin. Work on the new ramp, which will be erected at a cost of about $20,000, and which will be used for launching the flying boats now under construction, will begin immediately. The first ramp will be 140 feet long and 40 feet wide. Seventy feet will be above water and seventy below, the grade of the incline being seven per cent. The depth of the water at the outer end of the ramp will be four feet. It is planned to build other ramps as may be deemed necessary.

The runway will be built on what is known as Daisy Point and the flying boats will be aunched into what is known as Dark Head Creek. Tractors will be used for pulling the boats out of the water. A concrete road, twenty feet in width, will be constructed from the ramp to the assembly room of the factory which will be 1,500 feet distant.

There are now under construction at the Martin plant 40 flying boats for the Navy. These will be delivered on the water off the ramp where they will be taken over by Navy pilots and flown to Norfolk, Va. The first of the planes probably will be delivered late in May and the second a month later, after which they will be delivered at the rate of two a week.

Candler Field Operatives' Monthly Luncheons

To foster a spirit of cooperation and good will toward the Atlanta municipal airport, the operators of Candler Field, headed by Lee Sanders, manager of the S. A. T. base at the field, recently inaugurated a plan to bring Atlanta aviation enthusiasts together once a month at a luncheon to discuss with them plans for future development of the field.

At the first luncheon held at the Piedmont Hotel, April 5, about 75 of the city officials, members of the press, operators of the field, officers of the Fourth Corps Area, and the aviation committee of the city council were present.

Major-General Frank R. McCoy, commanding general of the Fourth Corps Area, and his staff were present at the first meeting. He discussed plans for furtherance of military air activities at the field, and members of the city council and Chamber of Commerce aviation committee outlined plans for improving the field in 1930.

Miami to Seattle Over Lighted Airways

ONE may now fly diagonally across the United States from Miami, Fla., to Seattle, Washington, over government lighted airways. On such a flight the plane would pass over the following towns: Palm Beach, Daytona Beach, Jacksonville, Waycross, Macon, Atlanta, Chattanooga, Nashville, Evansville, St. Louis, Kansas City, St. Joseph, Omaha, North Platte, Cheyenne, Rock Springs, Salt Lake City; Boise, Idaho; Pasco, Washington; and Portland, Oregon.

E. A. T. Planes Now Fly Without Change

Airmail planes of Eastern Air Transport now fly the entire distance between Atlanta and New York, and Miami and Atlanta, without a change of airplanes at Jacksonville and Richmond, as was customary before the new schedule went into effect April 1. New pilots take charge of the planes, however, at those places but without loss of time.

This was one of the several revisions made in the schedules of Eastern Air Transport when they doubled their service along the New York-Atlanta-Miami route. Four planes now operate daily along the line from New York to Atlanta, and six between Washington and New York. Night service was commenced in Florida instead of day service.

Charlotte, North Carolina, is the latest city to be included as a regular stop along the route.

Nashville Votes June 26 on Airport Bond Issue

All members present at a called meeting of the Nashville Airport Advisory Committee recently reaffirmed their support of the $1,000,000 airport bond issue which will be voted on June 26. Members of the committee are: James E. Caldwell, chairman; James A. Cayce, E. A. Lindsley, Albert E. Hill, Roscoe Beal, Mayor Hilary E. Howse, James G. Stahlman and Luke Lea, Jr.

Five-Way Aerial Service from Amarillo, Tex.

Daily air passenger service in five directions from Amarillo, Texas, has been inaugurated by Western Air Express and Mid- Continent Air Express. The routes include the old Los Angeles to Kansas City connection, with a ship each way daily, and three new connections: One to Wichita Falls and Dallas, to Oklahoma City and Tulsa, and to Pueblo, Colorado Springs and Denver. The route to Denver is operated by the Mid-Continent.

The new routes give Amarillo 14,500 miles of daily operation by Western Air Express and affiliated lines, making its port second only to Los Angeles.

Douglas, Arizona, Airport Now Port of Entry

The municipal airport at Douglas, Arizona, one of the regular stops on the Standard Airlines, has been made a port of entry.

This is the only airport in the world where an international border serves as a boundary line between two national airports. The American side of this international airport at Douglas is well developed and has a complete lighting system while the Mexican side is under consideration for immediate improvements. A new hangar at Douglas which has been under consideration for some time is practically assured and it is believed that construction will begin on the new building within the next sixty days.

G. N. Williams has been named superintendent of the Douglas municipal airport to succeed B. R. Russell.

S. A. F. E. Plans Terminal at Fort Worth

If certain improvements are made at the Fort Worth airport—Meacham Field—Southwest Air Fast Express will establish a terminal there, according to communications recently filed with Fort Worth city and commercial executives by C. E. Fleming, general traffic manager of S. A. F. E. The improvements include:

Removal of high tension wires to the north and east of the field, which has already been decided upon. Removal of the slope in the center of the east-west runways. Hard surfacing of runways with cinders or chat, rolled and maintained.

If the terminal is established, Fort Worth will have 24-hour service to the East.

How Clarksville Put Over a Municipal Airport

Clarksville, Tennessee, a city of some 12,000 population, has terested in aviation—so much so a number of citizens extremely inthat they refused to allow their city to remain without an airport, although they were forced to abandon hope of municipal aid early in ther campaign to put their city on the air map.

The officials of the city government, although refusing to involve the city in the financing of the project, pledged their wholehearted moral support. A survey showed that there were many business men in the city who believed that they should have an airport but were unwilling to have the city jeopardize its finances in developing and purchasing a site.

Then the pioneers got an idea. Why couldn't it be made a civic proposition throughout? If a sufficient number of people could be persuaded to back the movement, then a corporation could be formed, the money raised and the project carried to completion.

In the meantime, people of Clarksville had become well acquainted with what these pioneers were calculating on accomplishing. So well did some of these citizens appreciate the value of the airport that they offered their services in raising the necessary funds. A day for the campaign was set, and a "selling force" organized. Subscriptions were taken —not in large substantial sums, but in sufficient number of small pledges that, when nightfall of the campaign day came, enough money had been raised to make the airport a certainty.

With money in the treasury, the next step was to organize the Clarksville Aviation Corporation. Collier Goodlett, an attorney, was made president. Adolf Hach, a tobacco manufacturer, was elected as chairman of the board of directors.

After the site had been selected and purchased, the city engineer of Clarksville made a survey of the land. There were a number of improvements also necessary to be made, and these tasks were accomplished by the voluntary services of various citizens. The county built important roads leading into the airport site. Briefly, everybody who could help did so without even a thought of remuneration.

Last October the Clarksville airport had its formal opening. Again there was that spirit of cooperation predominating, and naturally the opening was a success. Entertainmet was furnished to the many air-enthusiasts who attended the function. The cost of transportation to the invited guests was also borne by the Clarksville Aviation Corporation. Some 30 planes were landed for the opening.

Cities throughout the country interested in locating an airport, might get two valuable lessons from the experiences encountered by the Clarksville Aviation Corporation. First, that it does not take a large city to put across such a movement. Second, when plans are started for an aviation field they can be carried to a succesful conclusion through united effort and a spirit of cooperation regardless of handicaps.

The field consisting of 160 acres has been in use since last October. A standard steel hangar, 80 by 100, has just been completed. The airport is surrounded by large farms which makes it splendid country for student training. The field is located geographically on the lines between St. Louis and Nashville and also between Louisville and Memphis, which brings passing airmen to the field each week. Lieutenant M. C. Hoppin, of the Department of Commerce, recently inspected the field and told the citizens of Clarksville that the wonderful "set-up" assured the city of a field capable of development to command the highest Department of Commerce rating.

The new hangar under construction at the Clarksville, Tennessee, Municipal airport. It was financed by popular subscription.

International to Operate from Dalworth Field

Announcement of the formation of the International Airways Corporation, a transport company with operation headquarters at the new Curtiss-Wright Field at Dalworth, midway between Dallas and Fort Worth, Texas, has just been made by Fain Gillock of Brownsville, Texas, who is president of the new air line. The main line to be operated by the Southwest's newest air project will president of the new air line. The ville. The company will also operate five branch lines from its Dallas base headquarters — one to Oklahoma City, another to Tulsa, a third line to San Antonio, one line to Houston and the fifth branch will serve Beaumont and Port Arthur, Texas. Operation of all lines was expected to begin the latter part of April.

New Mexican Airways Are Approved

Concessions for three airways have been obtained from the department of aviation of the Ministry of Communications and Public Works by Corporacion Aeronautica de Transportes which operates the Mexico City-El Paso, Texas, and Brownsville, Texas.-Mazatlan services. One route will be between Monterrey to Laredo, Texas; the second from Monterrey to Tampico, with a stop in Ciudad Victoria, capital of the state of Tamaulipas; and the third from Ciudad Victoria to Manzanillo, on the Pacific Coast, with stops at San Luis Potosi City, Leon and Guadalajara.

The company is planning to establish soon a service between Tia Juana and Ensenada, northern district of the Territory of Lower California, with a stop in Agua Caliente. Application for this service has been filed with the federal government and is expected to be granted at an early date.

Thompson Using Diesel On Mail Planes

Through its recent adoption of the Packard Diesel engine, the Thompson Aeronautical Corporation, operators of Michigan air mail and passenger transport lines became the first air line in America to put the Diesel in daily service.

The Diesel has been test flown over the Thompson line for a number of weeks. The first TAC ship to be powered with the Diesel is a Stinson Detroiter monoplane.

NEW AIRPORT DEVELOPMENTS

Mobile, Ala.—A $50,000 bond issue is under consideration for improving the local airport.

Corinth, Ala.—An airport is being developed two miles north of here on the Shiloh highway.

Roanoke, Ala.—Plans are underway for establishment of a municipal airport here.

Selma, Ala.—The city council is making plans for improving the local airport.

Forrest City, Ark.—A 160-acre tract, known as the Galloway place, one mile north of this city, has been selected for an airport. It is planned to open the field some time in May.

Wynne, Ark.—The local Chamber of Commerce aviation committee is seeking a site for development as a municipal airport.

Gurdon, Ark.—An airport was recently dedicated here. Planes from Little Rock and other surrounding towns put on an exhibition during the opening.

Bentonville, Ark.—The Midwestern Air College of Hutchinson, Ark., has been given a lease on a 30-acre tract near Droke School, about midway between Rogers and Bentonville. The field will be conditioned immediately.

Live Oak, Fla.—Improvements are to be made at the local airport under the directorship of the local Kiwanis Club.

Jacksonville, Fla.—A new office building has been opened at the municipal airport here. The buildingformerly used as an office building will be repaired and used as a waiting room. Runways are being widened.

Tampa, Fla. — Additional hangar space is being planned at Drew Field, Tampa's municipal airport. Construction will commence soon.

Sandersville, Ga.—Funds are being raised by subscriptions for establishing an airport adjoining the golf links between Sandersville and Tennille.

West Point, Ga.—The local Chamber of Commerce is sponsoring a movement to establish an airport here. A site has been selected and will be surveyed soon.

Cave City, Ky.—Plans are under way for development of a municipal airport here. Cave City is a short distance from Mammoth Cave, which will be served by the local airport.

Somerset, Ky.—The Pulaski Post, Number 38, of the American Legion is planning to establish a memorial airport here.

St. Helens, Ky.—The Crescent Air Service is contemplating the establishment of a field here for its private use.

Central City, Ky.—A movement is under way here to secure an airport.

Louisville, Ky.—Contract has been placed by the Louisville and Jefferson County Air Board of Louisville with J. U. Schickli and Brothers for installation of a taxi apron at Bowman field.

Bowling Green, Ky.—An airport committee has been named by the mayor of Bowling Green to study possible sites for an airport here.

Wichita, Kan.—Plans are under way for the erection of a new administration building here to cost $200,000.

Opaulousas, La.— An airport will be developed here by the Weddell Williams Company.

New Orleans, La.—The New Orleans levee board has taken preliminary steps towards the establishment of an airport on the land fronting Lake Ponchartrain. The Wedell-Williams Air Service's field on the Jefferson Highway, five miles west of New Orleans, was opened April 12.

Natchitoches. La.—Work on a $35,000 municipal airport here has started under the direction of Raymond E. Breazeale. The site comprises 200 acres adjacent to the city, and will be completed in 60 days.

Hattiesburg, Miss.—A new steel hangar at the local airport has been completed, and field, hangar and obstruction lights are to be installed soon.

Greenville, S. C.—The Newell Construction Company has been awarded contract for topsoiling and grading the local airport. The area of the field is to be increased and two runways provided.

Sumter, S. C.—The municipal airport here was dedicated Saturday, April 26. Many fliers attending the Columbia airport dedication participated in the opening of the field.

Memphis, Tenn.—The entire field here has been made available for landing and take-offs, grading of the northeast end of the field having been completed recently. The field is being improved to meet the Department of Commerce demands for an A-1-A airport.

Nashville, Tenn.—Citizens will vote on a bond issue June 26 for a municipal airport. The Nashville airport advisory committee through an act of the Nashville city council, April 22, was changed to an airport commission with power to select a site for a new airport. Expenditure of $2,500 of the airport fund was authorized for surveying possible airport sites.

Humboldt, Tenn. — Inspection of several sites was made recently by John Halliburton and Clyde McCall, who visited Humboldt at the invitation of the Chamber of Commerce and Mayor Marnett with a view to the establishment of an airport. The matter has been under advisement for some time and steps will be taken shortly to make it a reality.

Knoxville, Tenn.—Grading has been completed at the local airport and a hangar is to be erected soon.

Friendship, Tenn.—An airport has been opened here by Roy Sudbury.

Asheville, N. C.—A $100,000 corporation has been formed to take charge of the development of the Asheville-Hendersonville airport. The firm will operate a complete flying service. The firm is known as the Asheville and Hendersonville Flying Service, Inc.

Abilene, Tex.—Work on the local airport is nearing completion. Buildings costing $150,000 have recently been completed and formal dedication of the field is scheduled for May 31.

Houston, Tex.—The 800-acre Metropolitan airport, six miles from Houston, is almost complete. Only one-half of the available acreage is being developed at present.

Stanton, Tex.—The United States Department of Commerce has taken a ten-year lease on 200 acres two miles north of Stanton on the Lamesa highway. This will be a government emergency field on the new transcontinental airway.

Marlin, Tex.—Runways are being built at the newly established airport here.

Beaumont, Tex.—The administration building at the municipal airport here is being enlarged and redecorated. It was recently leased by the Gifford Flying Services.

Anahuac, Tex.—Tentative plans for an airport have been completed. A site has been selected and given government approval. The port will be midway between Houston and Beaumont.

Danville, Va.—Improvements costing $8,000 will be installed at the local airport following the recent leasing of the airport to the Dixie Flying Service of Charlottesville, Va. A new hangar will be erected immediately.

Lynchburg, Va.—The construction of a hangar at the local airport has been authorized by the city council. A sum of $15,000 has been provided for purchasing a hangar and other accessories.

Newport News, Va.—The Chamber of Commerce is sponsoring a campaign to secure a municipal airport for this city. Several possible locations for the port are under consideation by the committee.

Fairfax, Va. — Dr. Hugo Eckner recently visited the George Washington airport with a view to establishing the American terminal of the proposed trans-Atlantic Zeppelin line here. The airport comprises 1,300 acres and more than 2,000 additional acres are available should it be necessary to enlarge the plant.

Richmond, Va.—The city will erect a hangar at the Richard Byrd airport. Cost of the hangar will be approximately $6,000.

Proof of the Safety of Air Travel

THE Stout Air Lines, operating between Cleveland and Chicago, recently completed the flying of its one millionth mile without injury to a passenger. Over 107,000 passengers were carried in the course of running up this mileage.

Aeronautical Personalities

Lindbergh's Comments in Miami Interview

LIKE Igor Sikorsky, the noted airplane manufacturer, Charles A. Lindbergh, the famous trans-Atlantic flier, believes the trend in commercial aviation is toward the use of larger transport ships, and he thinks air speed has hardly been tapped.

He said as much to a representative of SOUTHERN AVIATION at Miami on April 25, when he arrived there preparatory to his flight which was to split the Caribbean circle and cut the Pan-American Airways route into South America so that faster time can be made by the big transport planes between Nicaragua and Miami.

"It is my belief that the use of larger ships will grow steadily on the main trunk lines of the big passenger and mail carrying lines," Col. Lindbergh said, "but on the branch lines these companies will continue to use ships of varying size, according to the traffic requirements."

Mr. Sikorsky said that he would predict the use of larger transport ships over the main lines, when he was a visitor to Miami during the past winter.

Col. Lindbergh also said that the ultimate in speed has not been reached and he believed that there was much future development in store along this line. When asked if he would predict that planes would be going as fast as 1,000 miles an hour fifty years hence, he laughed and replied, "Well, I hope so, and it's safe to say no one would contradict this."

Asked if he would continue his Mayan ruin explorations, Col. Lindbergh replied that he "would enjoy continuing the work very much," but said he had no definite plans along this line at present and certainly would not be able to add to his explorations while on his South American jaunt.

Photo of Col. Lindbergh snapped in Miami on April 25

He did not appear to be tired from his trip from Washington to Miami, and when asked why he always appeared fresh after a trip, replied he had been asked the opposite question as frequently. "As for the trip down here, it was nothing," he said, "a mere seven hours."

Col. Lindbergh said he would predict no radical change in the present design of planes, but said any evolution would come about gradually as various improvements were made.

Colonel Lindbergh arrives in Miami to open new air mail service

He'd Rather Fly Than Do Anything Else

Pilot John Picer, who carries the mail over the Tennessee mountains and the Georgia hills between Atlanta and Evansville for Interstate Airlines, would rather fly a plane than any thing else he can think of doing, and he has had plenty of experience doing other things besides flying and knows his choice of occupations.

Among his experiences was four years of Air Corps work during the war where he was a second lieutenant.

After the war he and George Haldeman did stunt flying and commercial work together, and at one time conducted a flying circus. When he got married his wife extracted a "no flying" promise from him, but after a few months on the ground he in turn extracted permission from her to start flying again, and he has been more or less in the air ever since.

Ledbetter Holds Solo Record at Tampa

Ira Ledbetter, recent high school graduate and student at the McMullen Flying School in Tampa, Florida, made his first solo flight after three hours and forty-two minutes instruction. He is a full-time student in the school, working his way by repairing wings and other parts, at which he has become proficient enough for his work to pass the Department of Commerce requirements. He has rebuilt 16 wings for various types of planes, some of them for owners as far away as New York City.

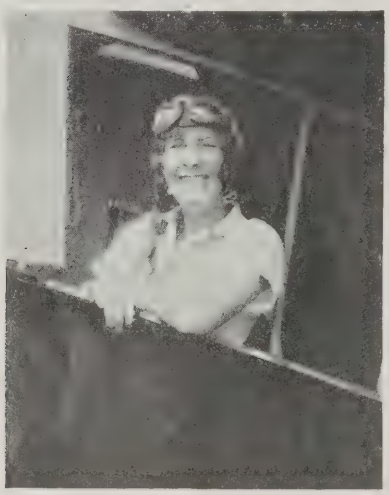
He plans to enter a technological school next fall with a view to becoming an aeronautical engineer.

Pilots Eugene R. Brown and Earl Potts, air mail pilots for Eastern Air Transport, were presented with watches and other gifts as they met at Charlotte, N. C., on April 1, to take on the first cargos of air mail to be dispatched from that city. Each pilot was taken from his cockpit by enthusiastic members of the throng and requested to make a brief talk before he was allowed to proceed with his cargo.

A New World's Altitude Record for Women

ELINOR SMITH, as a result of her climb to 32,000 feet in a Bellanca cabin plane on March 11, on Long Island, is the holder of the world's altitude record for women. Her climb exceeded that of Marvel Crosson, previous holder of the title, by some 8,000 feet.

Miss Smith used the same Bellanca that George Halderman used to set the men's altitude record of 33,500 feet, a week previous to her record-breaking flight. In the neighbor-



Elinor Smith

hood of five miles above the earth, Miss Smith fainted and the plane went into a gentle glide earthward. When she regained her senses, instead of being 30,000 feet up, she was only about 25,000, at which height she said she still had her teeth firmly gripped on the oxygen tube, but was getting too much oxygen and was about to choke. She quickly adjusted the flow, righted the plane and attempted to climb back to a greater height than before. But the motor was not performing perfectly and, facing a fuel shortage, she started towards the earth again.

Her gas supply lasted until she was near enough the field to glide in. She landed with a dead stick in a mud puddle which she described as an ignominous finish to the greatest thrill she has ever had.

The two barographs placed in the plane by a member of the National Aeronautic Association as a representative of the Federation Aeronautic International were checked upon landing and one was found to register 30,000 feet and the other 32,000.

The first woman's altitude record to be made since sanction by the F. A. I. was necessary was made by Ruth Alexander on November 18, 1929, when she ascended to 15,718 feet at San Diego, California. This record was only recently approved by the F. A. I., but Miss Alexander holds the distinction of making the first official women's altitude record.

Previous altitude records for women, though not recognized officially, have been made by Lady Mary Heath, Louise Thadden, Marvel Crosson, Ruth Law, Louise Favier, Mlle. An[illegible] Peyre and Bertha Horschem.

Four Generations Fly At Charlotte

Four generations—great grandfather, grandfather, father and son—all got up in the air at one time in the same airplane recently when Howard Weant, an employe of Eastern Air Transport, Inc., celebrated his promotion by getting them all together.

Weant recently was named field manager at Charlotte, N. C., when that city became a stop on the New York-Atlanta-Miami air mail route, operated for the Government by Eastern Air Transport. His father, John A. Weant, of Salisbury, N. C., and his grandfather, J. M Weant, of Franklin, N C. came to Greensboro, where the third generation was on duty with the airmail line. It was then that the four generations got into the airplane and flew over the countyside together.

Aviator Howard's son is Donald Weant, eight months old, but it was not his first flight. Neither was it the first flight for Howard's father. But it was the first flight for the great-grandfather, who is 75 years old. He expressed himself well pleased with flying.

H. S. "Bill" Green, sales representative for the Inland Aviation Company, recently made what is believed to be a record flight for a lightweight airplane when he flew from Dallas, Texas, non-stop to Kansas City in four hours flat. The Le Blond 60-h. p. motor used only 20 gallons of gasoline. He left Houston at 10 a. m. the same morning. As he expressed it, "from the tropical to the frigid zone in a little better than half a day."

Virgil Turnbull, Southern Air Transport passenger pilot, has been assigned to the Dallas-Fort Worth-El Paso route, replacing Herman Rader, who has been transferred to Tulsa for tri-motored Fokker duty on American Airways, Inc.

He Plans Non-Stop Flight Detroit to Budapest

Lieutenant Alexander Magyar, a bombing pilot in the Austrian Army during the war, is planning a non-stop flight from Detroit to Budapest during June. He is taking a refresher course at Parks Air College preparatory to his attempt to make the 4,500 mile hop in a Lockheed Sirius.

Lieutenant Magyar is devoting special attention while at Parks to navigation and the flying of big ships. He had a total of 4,000 hours

Lieut. Alexander Magyar

to his credit before coming to America, including three years of flying for the Deutsche, Luft and Hansa in Central Europe. He will be accompanied on his trans-Atlantic attempt by Lieutenant George Endres, Austrian pursuit pilot during the war, who will act as navigator and co-pilot.

Magyar's plans are to take off from Detroit with a comparatively light load of gasoline, about June 15. At St. Johns, New Foundland, he plans to refuel in the air, and from that point continue across the Atlantic. If necessary he will refuel again in Ireland, but under normal conditions the Sirius is capable of a non-stop flight from St. Johns to Budapest with a comfortable margin of safety. The ship is capable of a high speed of 190 miles per hour and cruises at 150 miles per hour.

The flight is being sponsored by Hungarian-American societies in Detroit, Toledo and other American cities, as well as similar organizations in Canada.

Ralph Haynes has been engaged by the American Aeronautical Corporation as pilot.

No Thrilling Experiences in Years of Flying

IN THE old days when flying was still a sport for daredevils, the typical pilot was a soldier of fortune, a romantic figure entirely apart from the workaday world.

Now that aviation is a business, like any other, the pilot is becoming

W. J. Bryant Robbins

more and more a business or professional man.

Typical of the new age is W. J. Bryant Robbins, pilot on the air mail lines of Texas Air Transport, Inc. Robbins was born in a little country town near Fort Worth. Except for a few years barnstorming over the country, he has lived in that little town all his life. He worked for awhile in a railroad shop but decided he would rather fly.

In all his experience since he became a pilot, he has never had a serious crack-up. He scratched his head hard when questioned to think of something thrilling in his career.

"Why I don't know. Nothing much ever happened. Once a ship was too heavily loaded and didn't take-off and so I ran over a fence. Another time I landed in a tree top. But nobody got a scratch out of either of them. I don't know. I can't think of anything thrilling."

Robbins learned to fly in 1923. He was taught by "Reg" Robbins, pilot of endurance flight fame, who is a cousin of his. He soloed on a June afternoon. It was an ordinary, uneventful flight that seemed to set the tone of his whole career.

"Why, no, there wasn't anything unusual about it. I knew I could fly it before I took off. I didn't feel much different from the way I did when my instructor was in the ship. And nothing happened."

After he learned to fly he barnstormed with "Reg" Robbins over Texas, Oklahoma, Kansas, Illinois and Missouri. He spent about three years flying around over the country, carrying passengers.

And then he went to work for the Texas Air Transport, flying the mail. He likes his work. It is far from monotonous to him, but on the other hand, there is nothing in it, he declares, that would make headlines.

Robbins is married and has a little son who maintains that he will some day be a pilot, too. Asked for his opinion on the matter, the father said, "Why, yes, I see no reason why he shouldn't fly if he wants to.

Movie Vamp Receives Pilot's License

Edna May Cooper, first woman student to enroll at Parks Air College of East St. Louis, Ill., under the new school policy which permits the entrance of women students for flying instruction, was awarded a federal flying license as private pilot recently.

Miss Cooper is a member of the movie colony in Hollywood, California, and has been featured in dramatic and vampire roles in more than a score of movie productions including the "King of Kings," "The Ten Commandments," "The Show Girl" and others. It is believed that she is the first established movie actress to make a solo airplane flight or to hold a pilot's license.

After a three months vaudeville

Edna May Cooper

tour throughout the United States, Miss Cooper will make a round-the-world flight, working her way by means of theatrical appearances and the writing of a series of articles on her experiences. A feature of her world flight it is said, will be an attempt to fly the Atlantic Ocean, the flight being scheduled during the month of July.

Miss Ingalls Obtains Her Transport License

MISS LAURA INGALLS, 25-year-old intrepid girl flyer in the Universal Flying School, recently received her transport license, the highest government pilot rating obtainable.

She is the first woman pilot in the United States to receive a transport license from a government approved school, and the fifteenth woman in

Miss Laura Ingalls

the country to qualify for a transport license.

Miss Ingalls finished her transport pilot's ground examination with an average grade of 95 per cent. Four male students took the ground examination with her at the same time and her grades were the highest.

Her written and ground tests covered written and practical work on airplanes, engines, air commerce regulations, air traffic rules, meteorology and navigation. Her grade in meterology was 100 per cent and for navigation 95 per cent. While in this course her work on engine overhaul was rated as equal to that of any man in the section.

Her flight tests included speed and shallow maneuvering, 720 banks, spiral from 2,000 feet, two spot landing, two 360 and 180 landings, right and left spins, etc.

Miss Ingalls came to the Universal School from Roosevelt Flying Field, New York, last June and on September 27th won her Limited Commercial pilot's license. Her home is in New York City. She lived in Paris and Vienna for three years, studying music and languages. She recently set a new loop record for women, making 344 consecutive loops.

Now an Executive After Four Year's Flying

AFTER four years of flying the mail and passengers over the Western Air Express route between Los Angeles and Salt Lake City,

Jimmy James

Jimmy James has relegated himself to the palpably obscure task of directing the matters of his company as general superintendent in charge of flying personnel and dispatching. His fellow pilots were amazed when they read the news of his acceptance of this position.

James is one of the four pilots to inaugurate the Western Air Express mail service in April, 1926. He has flown many distinguished personages over the route from Salt Lake to Los Angeles, among them Will Rogers, who commented at length on James' flying ability in one of his published articles.

When the U. S. entered the war in 1917 Jimmy was one of the first to enlist in the air corps, and thereby started a career that led him to collect five honorable discharges, which he says is a rather hard matter to explain, but upon being pushed he can produce them, as concrete evidence.

He spent four years in the Air Corps, outranked Eddie Rickenbacker for a day, saw every American flier trained overseas, collected his five discharges, and was rejected in America in 1921 when he applied for a job as air mail pilot.

Upon reaching the other side of the Atlantic he was transferred to the Royal Flying Corps, where he served as a ferry mechanic, or what is today known as a co-pilot. After spending August, September and October, 1917, in England he was transferred to France where he served at various air depots until 1919. Upon arrival in the U. S. he continued his military training at March Field, later joining the forest patrol and still later the Standard Oil Company.

It was only after weeks of argument that Jimmie was persuaded to give up his position as pilot, tuck away his flying togs, sit behind his own desk, and give orders to his buddies. It meant a sacrifice financially as well as in the association of his fellow fliers.

Ted Kincannon, former vice-president and general manager for Cardinal Fliers, Louisville, and later general manager for Curtiss Flying Service, at Louisville, until succeeded about the first of the year by Maj. John C. Bennett, Jr., formerly of Nashville, has gone West, having accepted a post with Commandaire in the Los Angeles territory.

Art Wintheiser, assistant chief test pilot for the American Eagle Aircraft Corporation for the past two years, has resigned and with N. L. Sifers, an aircraft salesman, will tour Kansas and other Central Western states in the interests of American Eagle sales.

Harry C. Williams, multi-millionaire sportsman of New Orleans and Patterson, La., recently purchased a Ryan Brougham B-7 Wasp powered. Mr. Williams is vice-president of the Weddell-Williams Air Service of New Orleans. The Ryan, furnished with a special paint job and equipped with landing lights, will be used by Williams for business purposes and personal pleasure trips.

H. Cutler of Dallas, Texas, has been appointed sales manager for the Memphis-Universal Aviation School. Before joining Universal, Cutler was with Employers Casualty Insurance Company of Dallas and previous to that was assistant sales manager for the Kansas City-Universal Aviation School. His assistant is Frank Schulz, Jr., also of Dallas. Schulz was with the traffic department of the Universal system at Kansas City for six months.

D. H. Webber, formerly assistant chief engineer for the Wallace Aircraft Company, a division of the American Eagle Aircraft Corporation, has been made chief engineer for American Eagle. Mr. Webber succeeds H. J. Stonerburner.

Macauley Directs Sales of Packard Diesel

EDWARD MACAULEY, recently appointed sales manager of the aircraft and marine engine division of the Packard Motor Car Company, and in charge of sales of the new Packard-Diesel aircraft engine, formerly was a sales manager of the Detroit retail branch of the Packard company. He was promoted to the post of assistant to the vice-president of distribution where he obtained a broad experience in wholesale sales work to add to an experience of years in retail selling. He was so sucess-

Edward MacCauley, who will direct sales of the new Packard Diesel engine

ful as a salesman as to win the coveted honor of being a Packard Master Salesman.

Mr. Macauley has announced that for a time at least sales of both aircraft and marine engines will be handled directly between the Packard company and the trade. This plan is expected to hold until some further distributing program has been worked out.

The new Packard aircraft motor sales executive is a young man. He was educated in Detroit public school and in Detroit University School. Internal combustion motors, automobile, marine and aircraft power plants have been his hobby for years. He has had many hours in the air, including a considerable time in free balloon work.

Mr. Macauley's apprenticeship as a Packard man with an emyloyment record of more than eight years was served in the shops and included everything from running a lathe, or job as a dynamometer tester, to body design work. He made a number of important contributions to the comfort and appearance of present Packard cars.

General News of THE AVIATION INDUSTRY

New York Show Featured Gigantic Air Liners

SIX of the largest air liners built in this country were displayed at the New York Air Show sponsored by the Aeronautical Chamber of Commerce of America, Inc., in Madison Square Garden May 3 to 10. The six large planes were: Fokker F-32, carrying 32 passengers; Ford, carrying 15 passengers; Sikorsky S-38, carrying 12 passengers; Consolidated Commodore carrying 22 passengers; Keystone Patrician, carrying 21 passengers; and the Savoia-Marchetti, S-55, carrying 16 passengers. This group of planes represent a value of over $500,000.

The entire Arena section of Madison Square Garden was given over to these large planes. They were the center of a general exhibition featuring air transportation. Booths surrounding the plane display were occupied by manufacturers of heavy duty aircraft motors and the various air transport lines throughout the country.

The F-32 Fokker, which recently was christened for use on the routes of Western Air Express, was the largest ship in the show. Its huge 100-foot wing spanned clear across the Arena. The Commodore is the largest flying boat manufactured in this country, a product of the Consolidated Aircraft Company of Buffalo, N. Y. The Savoia-Marchetti is manufactured in this country by the American Aeronautical Corporation; it is a twin-hulled flying boat. The Keystone Patrician is one of the largest tri-motored transports manufactured in this country and is powered with three Wright Cyclone engines. The Sikorsky amphibian is of the same type used by Pan-Ameriman Airways over its southern routes. The large all-metal Ford transport is similar to that in use on a number of air lines in this country; a special finshed plane was built for display here in New York.

Government Employes May Travel by Air

Major Clarence M. Young, Assistant Secretary of Commerce for Aeronautics, has transmitted the recent ruling of the Comptroller General of the United States, permitting the use of transportation requests for air transportation by employees of the Federal Government when traveling on official business, provided the fare does not exceed the established rail and Pullman fare between the points of travel. In his letter of transmittal, Major Young said:

"Prior to the Comptroller General's ruling, there was some uncertainty about the use of transportation requests for air travel. This uncertainty has now been removed."

Colonel Charles A. Lindbergh inaugurated the new cross-Caribbean air service of Pan-American Airways by making a non-stop flight from Havana to Cristobal, Canal Zone, on Sunday, April 27. The mail which the Colonel delivered in Cristobel, left New York City Friday night preceding its departure from Miami the following Sunday. The cargo was flown from Miami to Havana Saturday night, preceding its take-off Sunday morning for Cristobel.

The Department of Commerce has placed the minimum age requirement for any class of mechanic's license at 18 years, according to recent announcement by Clarence M. Young, assistant Secretary of Commerce for Aeronautics.

Southern Cities Compete for Zeppelin Terminal

TIDEWATER VIRGINIA is making strenuous efforts to be selected as the site for the American terminal of Dr. Hugo Eckner's proposed transatlantic Zeppelin service.

The famous German builder of these lighter than air craft who navigated his Graf Zeppelin on ts flight around the world, is now in the United States for the purpose of selecting a site for the American end of his line.

Early in April, with members of his party, he was a visitor at the laboratories of the National Advisory Committee on Aeronautics at Langley Field and while there he was met by representatives of the cities of Newport News and Norfolk and taken on a tour of possible sites in this section.

Dr. Eckner would make no comment as to the possibilities of selecting a site in Tidewater Virginia.

Sites at Richmond and Baltimore are also under consideration.

The most likely site is at Baltimore, it is believed, where it is understood interests have offered Dr. Eckener and his associates a landing field of approximately 1,000 acres and have expressed a willingness to build a hangar and shop to cost about $1,000,000.

Dr. Eckner at Old Point, Virginia, where he recently inspected possible sites for a Zeppelin base. Mayor Tyler of Norfolk is in the center and Commissioner Hamilton at the right.

Dallas Chamber Banquets Air Officials

THE Aviation Department of the Dallas Chamber of Commerce tendered a luncheon recently to visiting notables in the field of aviation. Among those attending the luncheon were Charles C. Jones, of New York, president of the Curtis-Wright Flying Service; Fain Gillock of Brownsville, president of the International Airways; Ray Sparks, general manager of International Airways; W. A. (Tex) Bohannon, manager of Dalworth Field of Curtis-Wright Flying Service; Homer D. Wade, vice-president of the Dallas Chamber of Commerce, and Dwight W. Carlton, aviation secretary of the Fort Worth Chamber of Commerce.

"Texas is without doubt," declared Mr. Jones, "one of the finest flying sections in the United States." Mr. Jones assured the local air interests that Texas could look forward to a rapid development of transcontinental lines, seeking the air transportation business of the Southwest. Mr. Jones conferred with Fain Gillock, president of the International Airways, on plans for the operation of the new air line between Dallas and Kansas City and Dallas and Brownsville. Mr. Gillock states that operation of the line will begin in a few weeks. The line is to use the Curtiss-Wright airport at Dalworth. Details are being worked out for the construction of a new hangar and a headquarters operation building for the use of International Airways.

Other speakers were introduced by M. J. Norrell, vice chairman of aviation department of the Dallas Chamber of Commerce. Dwight W. Carlton, aviation secretary of the Fort Worth Chamber of Commerce, discussed the co-ordination of efforts between Dallas and Fort Worth for the development of aviation and allied industries. Mr. Carlton suggested that the two cities might combine their activities for aerial development into one managerial project.

Mr. Gillock in announcing the headquarters for the International Airways at the Curtiss-Wright Field at Dalworth, states that the Kansas City to Brownsville run will be made in eight flying hours, with scheduled stops at Tulsa, Okla., Kansas City, Dalworth and San Antonio. Lockheed ships with a top speed of 185 miles and a cruising speed of 150 miles per hour will be used on the main line, while Travel Air planes will be used for local traffic. Five feeder lines will operate out of Dalworth port. Three of these will open soon after the main line is in operation, one line each to Oklahoma City, Austin and Houston. Two other lines are proposed for Port Arthur from Brownsville and another to McKinney, Greenville and Paris, Texas, east from the Dalworth field. Connection mill be made at Brownsville with the Pan-American Airways serving Mexico and on into South American countries.

Besides, Fain Gillock, as president, the International Airways directors include Ray G. Sparks, general manager; Frank D. Hedrick, Olathe, Kan.; Geo. L. Davis and J. M. Daniels, both of Kansas City, and Judge H. L. Yates, of Brownsville. Two other directors are to be elected.

Spartan School Making Industrial Picture

The Spartan School of Aeronautics, Tulsa, Oklahoma, started April 1st on the production of a two-reel, natural color motion picture depicting the life of a student from the time he enters school until he graduates with a transport pilot's license.

The picture is being made by the Mid-Continent Pictures Corporation and directed by F. H. Herrick, formerly with Metro-Goldwyn-Mayer and Columbia Pictures, Inc.

The Spartan picture, called "The Dawn Patrol," is believed to be the first industrial photoplay produced in full natural colors. The air sequences are to be shot from a specially equipped Ford plane.

Glider Flying Now Taught at Parks

Announcement of courses for glider pilots to be taught by Parks Air College is made by Oliver L. Parks, vice-president and general manager. The first-class in primary gliding began work on May 2nd.

In preparation for the course Parks Air College purchased four "Gulls" — primary gliders — from Gliders, Inc., a division of the Detroit Aircraft Corporation. A glider already in use at Parks Airport will bring the number of available training ships to five. Gliding instructon at Parks Air College is being taught according to a definite curriculum just as are the courses in actual flying. The first-classes began with familiarization exercises calculated to acquaint the student with the use of controls. Then will come short hops in which the glider will be launched for 200-foot flights. When the student is able to handle the glider in straight flights he will be taught how to maneuver his motorless plane in the air to take advantage of the most favorable air currents.

The New York office, 535 Fifth Avenue, of Air Associates has been discontinued. Activites of the company are now being directed from Roosevelt Field, Long Island, where a service hangar, repair station, warehouse and general offices are maintained near the entrance to the airport.

The National Aero Reserves, a national organization for the promotion of aeronautics among those too young to fly planes, has a novel chapter in Kansas City, the "High Hat Glider Squadron." This group is comprised of Southwest High School boys who are taking up gliding in a serious and comprehensive way, using a glider to study, and all looking forward to aviation in a big way when their age permits.

A panoramic view of the new Curtiss-Wright Flying Service field and hangar midway between Fort Worth and

DO-X Will Attempt to Cross Atlantic

THE Dornier DO-X, largest airplane in the world, will attempt a transatlantic crossing in July by way of the Azores and Bermuda.

According to present plans, a crew of six and a passenger list of fifty will be carried in the hull of the giant ship which last October 21 flew successfully with 169 persons aboard.

Twelve 600-horsepower Conqueror engines will be relied upon to combat headwinds usually encountered in the westward crossing of the Atlantic. The installation of these engines will give the Dornier DO-X an increase of 2,400 horsepower over those used on the ship's first flight over Lake Constance.

Two of the Curtiss Conquerors are already in Europe. They are of the 12-cylinder V type, liquid cooled, and their propellers are geared to give greater lifting efficiency in view of the enormous load that must be carried.

The distances of the successive hops to be made by the DO-X are as follows: Lake Constance to Barcelona, 600 miles; Barcelona to the Azores, 1,655 miles; the Azores to Bermuda, 1,821 miles; and Bermuda to New York, 699 miles. With the additional power provided by the Conqueror engines, it is estimated that the speed of the ship will be increased from 115 to 125 miles per hour. At a cruising speed of 125 miles per hour, the engines will consume twenty-five gallons per hour or 300 gallons per hour for all twelve. On the longest hop from Azores to Bermuda, the total load will be approximately 40,800 pounds,

The engines on the DO-X are arranged in two banks of tandems—six engines in the leading edge of the auxiliary wing which is above the large wing and six in the trailing edge. The ship has a wing spread of 162 feet, and its hull, a boat of very rugged construction, is 152 feet long. It is 30 feet high. It is said that the ship can fly fully loaded with only eight engines in operation. The motors are controlled in unison or singly, from the bridge of the ship.

The hull of the DO-X is so large and strong that it can stand the buffeting of the heaviest seas and the ship has demonstrated its ability to take-off from water on which fourteen-foot waves are running. In its performance of last October, it took aloft more passengers than had ever been carried in any aircraft, including lighter than air dirigibles.

The DO-X was launched on Lake Constance, on July 14, 1929 having been built at Altenrhein, Switzerlanl, just across the border from Freidrichshafen, Germany, the home of the Graf Zeppelin. After its arrival in New York it will go to Chicago by way of the Great Lakes and possibly to the Pacific Coast by way of the Panama Canal.

Hydroplane to Patrol Mexican Coast

Arrangements have been made for the establishment of hydroplane patrol of the Gulf of Mexico coast and the Pacific seaboard as the result of a conference between President Pascual Ortiz Rubio and General Joaquin Amaro, Minister of War and Marine. The plan is to place five hydroplanes on each coast as a means of combatting smugglers and other marine law breakers. The planes will be of the "Azcarate" type designed by General Juan F. Azcarate, chief of the department of aeronautics of the Ministry of War and Marine, and they will be constructed at the Azcarate Aircraft Factory in Mexico City.

Detroit Aircraft, during the recent All-American Aircraft Show at Detroit, sold eighteen ships and seventy-one gliders for a total price of $265,000. Eleven of the planes sold were Eastman Flying Yachts. One Packard-Diesel powered Ryan Foursome was sold. The metal fuselage Lockheed was shown for the first time.

Penalties for Violations of Air Regulations

The Aeronautics Branch of the Department of Commerce dealt with 122 violations of the Air Commerce Regulations during the first three months of 1930, it was announced recently by Major Clarence M. Young, assistant Secretary of Commerce for Aeronautics.

Fines totaling $550 were assessed and collected for the three-months period and penalties in the form of 31 reprimands, 30 suspensions, 2 revocations, and 2 denials of licenses, were meted out for the violations. In 20 cases, evidence was produced which justified dismissal.

Violations of the Air Commerce Regulations dealing with acrobatics were greater than any other specific offense, the number being 28. Violations of low flying prohibitions ranked second, with 20; unlicensed pilots flying licensed planes, 14; flying without navigation lights, 5; and flying without identification numbers, 3. Miscellaneous offenses numbered 52.

Glider Club Organized in Baltimore

A glider club, the first of its kind in the Baltimore territory, has been formed and is known as the Glider Club of Baltimore. Plans are now under way for the construction or purchase of a number of gliders for use by the membership.

Temporary officers of the club are George Shepherd, president; W. C. Moss, vice-president, and Miss Jessie Davis, secretary and treasurer. Others directly responsible for the formation of the local gilder club are E. B. ("Tex") Anding, local pilot; Nelson Aimee, aircraft builder, and Henry Jessen, glider and airplane designer. The flying activities of the club will be carried on at the Green Spring Valley Airport. There are eighteen members, four of whom are women. Many of the members plan purchasing gliders for their own use.

Dallas, during the occasion of a banquet tendered officials of the company by the Dallas Chamber of Commerce

Detroit Aircraft Show Liberally Attended

THE third annual All-American Aircraft Show held at Detroit, April 5 to 12, although not participated in as extensively by the industry as a whole as some of the prevous shows, was declared by aviation leaders to have been one of the most succesful ever held, both from an attendance and merchandising standpoint.

Aircraft sales were reported as numbering 243, valued at approximately one and one-half million dollars. Attendance totaled 187,622.

The show differed radically from major shows held heretofore, in that it gave manufacturers an opportunity to show the prospective purchaser their wares on the floor and then take him outside for a practical demonstration in the air. A large hangar at the Detroit airport was converted into a display room, with only a few seconds required to reach the field for take-off and landings.

The show cannot be said to have presented a cross-section of the aviation industry, as many of the old timers heretofore present at the larger shows were missing. However, there was a very liberal showing of the products of the country's major manufacturing concerns.

The exhibits of Stinson, Fokker, Detroit Aircraft and Ford, were attractively displayed and these companies were awarded a liberal share of the actual sales made during the show.

The drawing power of the new Packard Diesel engine was evident throughout the seven-day show. It was the first time the Diesel had been shown publicly, and several planes powered with the Diesel were displayed at the show. The engine was displayed as a separate unit in the power plant division and also as installed in various model planes including a Ford tri-motor.

The Fokker display was perhaps the most complete of any made by the company since its affiliation with General Motors. The giant F-32 was flown to the airport and exhibited to the public on the display floor for the first time.

Evidence that the glider craze is sweeping the country was presented in the glider exhibits of the principal manufacturers. The motorless craft were displayed by Gliders, Inc., Alexander, Cessna, Bowlus, Franklin Brothers, Waco and others. Ninety-five sales of gliders were reported during the show. Gliders of both the primary and secondary training types were displayed.

Some of the new planes displayed included the Lycoming-powered Stinson air liner, the Buhl Airster powered with Wright Whirlwind 9 engine, the Warner powered Waco model F, a late design of the Monocoupe powered with a Lambert engine, the Watkins low wing monoplane powered with a LeBlond engine, the Wright Whirlwind powered Spartan 4-place monoplane, and the Diesel powered PA-3 flying boat displayed by the Towle Aircraft Company. The Consolidated Fleetster was one of the speediest planes on display. The all-metal Lockheed Vega made its debut during the show.

There was a large number of improved and new model aircraft engines on display. Evidence of the increasing popularity of the inverted in-line air-cooled engine was found in the large number of the types of power plants displayed.

The total attendance for the show was approximately 60,000 greater than the attendance in 1928 when the show was also held in Detroit, and the all-round success of the show just closed led the Detroit committee to make a strong bid for the event in 1931.

POLITICS developed wings in Kansas City recently, when the Republicans and Democrats both sent planes into the air to carry the names of their mayoralty candidates over the city. The Democratic squadron was headed by H. B. Tuxhorn, of the Tuxhorn School of Aviation, and the rest of the planes were flown by the students of the school. Mrs. Nora White piloted the ship which bore the Republican banners.

Schlee-Brock Distribute Driggs Skylark

National distribution of the Driggs Skylark has been taken over by the Schlee-Brock Aircraft Corporation of Detroit. The Skylark, designed by Ivan H. Driggs, is manufactured at Lansing, Michigan, by the Driggs Aircraft Corporation. It is powered with a Rover engine, a four-cylinder, air-cooled inverted power plant designed by H. E. Morehouse.

Aeronautical Chamber Medal for Byrd

The Board of Governors of the Aeronautical Chamber of Commerce of America have approved the striking off of a medal to be presented to Rear Admiral Richard E. Byrd and members of the Byrd Antarctic Expedition upon their return to the United States in June. Colonel Charles A. Lindbergh is the only man to have been so honored by the Chamber previously.

The Aeronautical Chamber's Board of Governors approved the striking off of a solid gold medal for Admiral Byrd, with silver medals for the 65 members of the expedition. Approximately 1,000 bronze replicas of the Byrd medal will be struck off for presentation to those attending the banquet at which the medal will be presented to Admiral Byrd and his comrades. The banquet is planned for the middle of June, immediately after Admiral Byrd's return.

Life of Planes Shown In Boeing Report

Data on the longevity of planes in daily scheduled operations, over the nation's longest air mail-passenger line, is contained in the operations report of Boeing System. Of twenty-four Boeing planes put into service July 1, 1927, nineteen are still in operation on the San Francisco-Chicago route. One ship, with 3,000 hours service "and still going strong," is the veteran of the fleet and there are five others with better than 2,500 hours service, and many others with more than 2,000 hours service.

Pacific Air Transport on the Los Angeles-Seattle route, also proves that proper equipment with proper servicing has a long life. The veteran of the Pacific Air Transport fleet has 2,600 hours, and although there is difference in age of about two years in some of the planes, it is practically impossible to tell which is the newest of the fleet. All Boeing System planes are powered with 525 h. p. Hornet engines.

Daily passenger service between Kansas City and Omaha was inaugurated recently by the Rapid Air Transport, Inc. This new company will operate planes once daily each way. The flying time is one hour and forty-five minutes. Seven passengers were on the first ships to make the new schedule, one ship a Ryan and the other a Bellanca.

In Future We Travel "The Modern Way"

A chronicle of the meanderings of a traveler over one route with the various present-day methods of transportation.

Chapter 1

We find ourselves in Atlanta, Georgia, under the necessity of making a quick trip to Birmingham, Alabama, some 175 miles distant. We've got to be there tomorrow morning, spend the day, and be back in Atlanta the following morning. That's that.

And so we hustle down to the railroad ticket office, and after looking over several time schedules, find that we can get an afternoon train at 4:15, which lands us in Birmingham at 9:20—the same night—or we can take a later train, sleep in the Pullman and get up at 7:00 the next morning in Birmingham. Looks as though the night train is the best bet, so we decide on that.

Accordingly we make the reservation, and along about nine o'clock at night, tear away from the family and make the trip to the station. The train is waiting, doesn't pull out for an hour or so. Fine! Here's where we get sound asleep before it pulls out.

No doubt you've undressed and dressed in a Pullman berth. Great experience, isn't it—for a contortionist. Oh, well, we finally get the old night shirt on and crawl in. Whew, but they sure do use steam in these trains. We didn't bargain for a Turkish bath, but they don't charge extra for it.

Eventually we get to sleep. Then along about 11:05 somebody tries to tip the train over. Wham! What in the——, you think, as you awaken with a start. Just then you see the station lights slipping past, and very disgustedly you realize that the train is just leaving the station. And so it goes, far into the night. And just about the time you do get asleep, here comes "George" with the admonition that it is 7:00 o'clock. All Out!

Anyway, here we are in Birmingham, with nothing to do but get breakfast and hang around for an hour before we can see our man.

Total cost of the trip, $9.75, plus a tip to "George," plus taxi fare, plus breakfast and plus a rough night's sleep and a swelly feeling in your head, and various cinders down your neck and in your ears.

Chapter 2

Again we are faced with the necessity of making a trip to Birmingham, from Atlanta. This time we plan on getting out the old gas car and making the trip by road. Let's see how we fare this trip.

Bright and early we pile out of bed, get the toaster and percolator going and around about 6:00 A. M. we hit the trail for Birmingham—175 miles or so away. About thirty miles down the road we note the gasoline gauge registers on 2. Must get some gas. We stop at a filling station, and load up, also some oil.

"How's the road to Birmingham?" we ask the man.

"Wal, she's fairly good 'till you cross the river. Only one detour between, just nineteen miles. They'll have the road open in a week or so."

Yeah! He was right. Where does the detour start and stop, and which is the road? Along about ten o'clock we begin to get sort of tired of fighting the old bus over the detours, and it is warming up. In fact, it is getting darn hot.

Blam! Kaflump, kaflump, kaflump! Well, nothing to do but get out and put on the spare. Raise up the seat, get out some tools. And of course when going on a trip, you always wear your best "bib and tucker." Little things like dirt and grease on your cuffs and trousers don't matter a'tall, you know.

Travel Air monoplane used by the Davis Air Lines in Atlanta-Birmingham passenger service

And so on, and so, on, until around one o'clock. We finally get over the mountains and right at our feet is Birmingham. We fight through traffic and get to a hotel. First job is to clean up, get some lunch and about two o'clock look up our man.

"Hello! Thought you had passed us up this trip. I looked for you all morning. Jackson was here this morning, but I put him off, thought sure you would be here. He came again just before lunch, and we went out to eat together. Figured your order book was filled, and not an hour ago gave Jackson an order for a half car load of that pipe we've been wanting. Mighty sorry. Wish you had phoned or wired, and I'd have waited for you."

Chapter 3

Still another occasion comes up making it imperative that we be in Birmingham at an appointed time. Will we make it on the train or in the car? But wait.

"Why don't you take the plane over?" asks a friend.

"Huh?"

"The airplane. Leaves Atlanta and Birmingham each morning at eight. Returns at five in the evening, leaving at three-thirty. Davis Airlines. New passenger route just started. Six-passenger ships. Nice trip."

"Well, now that's an idea. Guess I'll look into it."

Inquiry bears out the fact that they run on schedule, leaving both ends of the run at eight each morning and at three-thirty each afternoon. Fare $15. Let's see now. Trip by train cost around $12, counting meals, tips, taxi, etc. Plane saves three and a half hours.

The story is short and we find ourselves out at the air field about fifteen minutes before time to leave. Ah, there she is. Gee, but it looks big. They have the engine going. A mechanic is up in the cabin fooling around with things. Now he's out, going all around the ship, wiggling things here and there, and getting down close to look at brake connections, controls, etc.

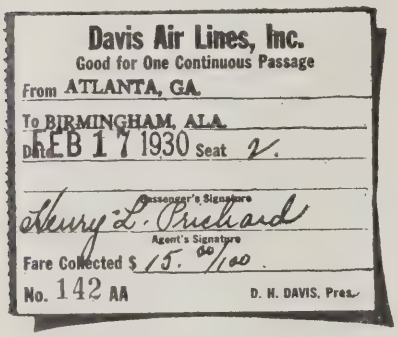
We have a little confession to make here. We are about to embark on our first cross-country trip, and are wondering what it will turn out to be. Suppose——.

But here comes the pilot. Cleancut young fellow. "All Aboard!" Our baggage has already been stored in a

rear compartment. In we climb, getting a seat right behind the pilot up front. He's tuning her up! Now he runs out on the field a little piece, locks the brakes and opens the motor wide open to clean her out. A light jerk, and the ship begins to move. For a moment it feels as though we had a flat tire, and then—smooth as a clay road in wet weather.

The ground drops away, we straighten out, and our pilot cuts down the motor. We're interested in the instruments and gadgets on the dash board. "What's this and what's that?" we ask. "That's the thing that tells how far up we are; this shows the engine speed in revolutions; this, etc." He's mighty nice about explaining things.

Then we look around. We are up about two thousand feet, and seem to be standing still. For a better view we open the window and stick our head out—and darn near get it yanked off. The air speed register


Davis Air Lines, Inc.
Good for One Continuous Passage
From ATLANTA, GA.
To BIRMINGHAM, ALA.
Date FEB 17 1930 Seat 2.
Passenger's Signature
Henry L. Pritchard
Agent's Signature
Fare Collected $ 15.00/100
No. 142 AA
D. H. DAVIS, Pres.

The ticket. A reminder of my first cross-country trip

is standing on 95. We can't be going that fast. The pilot assures us that we are. "We have a good tail wind," he tells us.

The thermometer when we left stood at 28. Inside the cabin it is comfortably warm, almost too warm, so we open a window a little bit, and settle down to enjoy the ride. Oh, there's a little town. "Tallapoosa," says the pilot. "There's Carrollton over at the left," he tells us, a moment later. Carrollton is away over by the Alabama line, nearly fifty miles away from Atlanta. Then we consult our watch. It's only 8:35, and it seems that we just left Atlanta a few moments ago.

Just then the engine slows down and we go into a long glide. Hey, lookout! The ship banks, but only for a landing. Anniston already!

We stop a moment, and again we're off the field without a bump. They have a mighty level little field at Anniston. Now we're over the mountains, and it gets a little bumpy. Feels as though the bottom is dropping out several times.

Next thing we see is a cement plant, then we see the smoke from the foundaries and smelters around Birmingham. Then, just over a mountain Birmingham spreads out. We pass over the city, and make an easy landing. At 9:45 we are at our hotel, still wondering how it all happened. Feeling fine, not worn out with a long trip, no cinders to pick out of our eyes and ears, no dirt or grease from the automobile, but feeling just as good as when we started. Do we return to Atlanta by train, or do we go back in the plane? Just as us "Why We Wanta Sprout Wings."

The North Texas Flying School, which was established recently at Love Field, near Dallas, where its headquarters are in Hangar Four, reports excellent progress. During its first month it enrolled twelve students, all of them local to Dallas or vicinity, for ground and primary flying instruction. A Barling monoplane is used in the pirimary training course. The school is contemplating the purchase of additional Barlings, a biplane and a cabin plane, according to William Neilson, president. In addition to the school, this organization acts as Northeast Texas dealer for Nicholas Beazley products.

The Warrington Motor Car Co., 2035—17th St. N. W., Washington, D. C., has contracted for the distribution of Davis Monoplanes throughout the District of Columbia, Maryland, Virginia, and North Carolina. The first carload of Davis Monoplanes has been shipped to them by the Davis Aircraft Corporation.

George E. Shaw, assistant purchasing agent for Southern Air Transport at Fort Worth Texas, has been made purchasing agent for the Robertson division of Universal Aviation Corporation, at St. Louis. He will be succeeded by H. W. Bryan, Jr.

Bredouw-Hilliard Aeromotive Corporation, who specialize in engine overhaul at the the Kansas City Airport, are extremely optimistic over the prospects for business of this sort during the year 1930. This company has the Wright Aeronautical service contract for the Kansas City territory. At one time during the month of February there were 12 aviation motors undergoing complete overhauls at one time, which gives an indication of the strenuous activity that may be expected in the industry this year.

Glider Production Planned by Baltimore School

Provisions for the production of motorless aircraft-gliders in Baltimore, Md., are being made by officials of the Baltimore School of Aeronautics, local aviation enterprise, according to an announcement by E. F. Cummings, vice-president of the organization. Equipment was being installed, and plans were being drawn for production of the first glider, which it is planned to start in the near future. The concern does not intend to enter glider production on a large scale, but plans for the present, at least, to confine its production to the needs of glider fans in this city. An order for one has already been received.

The concern is now engaged in the construction of an experimental glider, of the primary training type. It has a wing spread of 30 feet, is 18 feet in length, and is of a dual type construction.

A primary training glider from the Eaglerock factory in Colorado has been received at the Greenville airport for use of the Greenville Glider Club. The club was organized several months ago and now has twenty members.

Fairchild Aviation Corporation's American subsidiaries increased their gross sales from $2,656,000 in 1928 to $3,494,000 in 1929, or $838,000, according to Sherman M. Fairchild, chairman of the board of the company. "Fairchild Aviation Corporation" he says, "has just reorganized its sales force, and an aggressive sales program now under way promises to bring equally satisfactory results for the present year. The price of our Model KR-21 has just been cut from $4,685 to $4,125. The demand for this particular model has made possible increased production. Production on all of our planes is continuing at the rate of 25 per month."

Two Savoia-Marchetti three-place amphibians were flown to Detroit to be exhibited at the Detroit Aircraft Show, April 5 to 12, by the American Aeronautical Corporation. The two ships were piloted by William B. Atwater and Peter Talbot of the American Aeronautical Corporation. One of the planes was kept on constant exhibition during the show, while the other demonstrated from the water at the Detroit Municipal Airport.

Tremendous Mileage Flown by Army Air Instructors

Ninety-three million miles, the distance astronomers say the sun is from the earth, is quite a flock of miles and represents a magnitude and import that is practically incomprehensible to the average person.

Be that as it may, however, a huge swath has been cut in the mammoth figure in air miles flown by Army Air Corps instructors on duty at the Air Corps flying schools.

War department flying records, released recently at San Antonio, Tex., disclose that the instructors during the past seven years have flown a total distance equal to one-quarter of that from the sun to the earth, or approximately 23,000,000 miles.

Not straight up, of course. But the air miles accrued in flights around the home airdromes and on cross-country flights with student pilots.

And, last but not least, during that time there have been but five fatalities among the flying instructors, or an average of one death to each 5,000,000 miles of air travel.

Memphis Universal School Has Transport Rating

The Universal Aviation School of Memphis, Tenn., was recently granted a transport rating by the Department of Commerce, giving it the distinction of being the only transport commercial aviation school in Memphis and the Mid-South. The Memphis school is the sixth Universal school in the United States to be granted a transport rating, the other schools being located at St. Louis, Kansas City, Minneapolis, St. Paul and Cleveland.

Lindbergh Establishes New Coast-to-Coast Record

WHEN Colonel Lindbergh and his wife landed at Roosevelt Field on the night of April 20 in their Lockheed-Sirius, after a one-stop flight from Glendale, California, the Colonel modestly stated that he did not wish the flight considered a record although he bettered the time of Captain Frank Hawks, holder of both the east-west and west-east trans-continental record by over three hours.

Before taking off at the Glendale airport, Colonel Lindbergh announced that the purpose of the flight would be to ascertain the advantages of high altitude flying on transcontinental passenger and express routes, and since he planned a refueling stop he would not consider the flight an attempt to break Captain Hawk's record.

An altitude of usually over 10,000 feet was maintained throughout the flight, though at times they flew at over 15,000 feet. Colonel Lindbergh stated that no exceptional weather conditions were encountered, though he frequently had to battle adverse winds.

The total elapsed time of the flight was 14 hours, 22 minutes and 50

"Lindy," when a cadet at Kelly Field, and not so well known as at present. (Air Corps photo)

seconds. Colonel Lindbergh and Mrs. Lindbergh hopped off from the Grand Central airport Glendale, California, at 8:26 a. m., and landed at Roosevelt Field at 11:00 p. m. A stop was made at Wichita, Kansas, at 3:20 p. m. for refueling, after traversing the 1,249 miles between Glendale and Wichita at an average speed of 180 miles an hour. Colonel and Mrs. Lindbergh remained at the Wichita field for only twenty minutes and then took off for New York.

Aviation Bills Passed by Kentucky Legislature

All aviation bills before the Kentucky Legislature at the session ending in March were passed. One of these provided for authority to be given second-class cities to establish municipal flying fields. Another provides for construction of roadways by the state from made highways to municipal airports. Another creates the State Airboard, which will have full authority in the matter of issuing licenses and providing regulations for fliers, patterned after Department of Commerce regulations.

Army Places Large Order With Consolidated

Orders for 21 planes totaling approximately $200,000 have been awarded to the Consolidated Aircraft Corporation of Buffalo by the Army and Navy Air Corps, according to recent announcement by Lawrence D. Bell, general manager.

The orders include 15 Kinner powered Fleet training planes with additional spare parts for June delivery to the U. S. Army Air Corps at Brooks Field; 6 Fleets with extra parts for April delivery to the U. S. Navy Air Corps at Pensacola, Florida, and one Fleetster which will be used by the Army Air Corps for test purposes which was delivered to Wright Field, May 1st.

In addition to these planes the Consolidated Company has also delivered to Assistant Secretary of War, F. Trubee Davidson, for his personal use, the third of its Fleetsters in which he will make a tour of the army air fields during the spring months with Captain Ira Eaker as pilot. Both Fleetsters will be powered with 575 h. p. Pratt & Whitney hornet engines.

Ten flight students were graduated recently by the Memphis-Universal Flying School. The ten students passed the Department of Commerce examination for licenses. The limited commercial graduates were Chapline Clark, Harold Hossman, William Hurtgen, Noel d'Oyley, Ray H. King, Donald Geist, Franklin Rankin, Bud Caldwell and T. M. Ferguson. C. W. Gross completed the private pilot's course. Several are continuing with Universal's transport course

Lieutenant L. H. Dice, was elected president of Baltimore's "most exclusive" flying club, the Pilot's and Mechanics' Flying Club of Baltimore. Other officers elected were Charles H. Craig, vice-president; Wilbur Mullen, secretary and treasurer, and Walter Jones, operations manager.

Appointment of Richard Scott of Waxahachie, Texas, as exclusive dealer for Parks Air College aviation courses, was announced recently by Oliver L. Parks, vice-president and general manager. Scott has played varsity football at Trinity University for four years and is widely known throughout the state of Texas. His territory will include Basque, Ellis, Freestone, Henderson, Hill and Navarro counties.

Red Wing Flying Service Barnstorming South

To provide a greater volume of passengers for its fleet of airplanes, The Red Wing Flying Service, now touring the South, is advertising "Airplane Rides, 50 cents and $1.00."

The 50 cent rate is for children and the $1 rate for adults, according to Roy Ahearn, chief pilot and general manager in charge of the fleet of three Whirlwind New Standards.

The half-price for children first was put into effect in Birmingham, Mr. Ahearn said, reporting 983 persons carried in two ships. In Gadsden, Alabama, he said, 1,054 persons flew in two planes in one day.

Jack Dare, who recently broke the free-fall parachute record with a drop of 10,500 feet before opening his chute, is the drawing card for the circuses.

The Consolidated Air College, which operates its flying school at Richards Field, Kansas City, Missouri, announces a branch of its school to be opened soon at Trenton, Missouri, where several residents of that city have already enrolled. Three airplanes are to be sent to Trenton for the air work there. This move on the part of the Consolidated is the initial step in installing temporary schools at nearby towns wherein enough pupils can be enrolled to warrant installations.

Alfred W. Gieske, Jr., president of the East Coast Airways, Inc., has resigned, both his position and membership in the concern and has accepted appointment as vice-president and general operations manager of the Baltimore Airport, Inc.

Arkhoma Flying Service, of Okmulgee, Okla., recently opened a branch in Bella Vista, Ark., and will maintain flying service and instruction at both places, it is announced.

New Flying School Starts Operations in Dallas

On April 21st a new flying school was launched by Paul Woodall, making six aviation schools in Dallas. The school will be known as the Woodall Flying School.

Equipment at present consists of two Fleet planes, one powered with a Kinner motor and the other with a Warner. The school plans the purchase of a Travel Air with Wright J-6 power, according to Woodall.

Courses offered are ten hour solo course, private pilot's course, limited commercial, and transport course.

Until a permanent hangar is secured the company's operating base is the Good & Foster Aero Service's new steel hangar No. 1 at Love Field.

Tulsa Distributor for American Eagle

American Eagle Aircraft Corporation announce the signing of a fifteen-plane contract by Clarence A. Trump of Tulsa, Oklahoma. Mr. Trump will be the American Eagle distributor in Tulsa and will take immediate delivery on an American Eagle biplane, Kinner powered. Another Kinner powered biplane has been sold to L. L. Clark of Branson, Missouri, equipped with pontoons for use on Lake Taneycomo, a lake 40 miles long and a favorite summer resort of Kansas Citians.

The Nicholas-Beasley Airplane Company of Marshall, Missouri, announces the sale of fourteen planes since the first of January. Two additional dealers and distributors for their Barling NB-3 monoplane are also announced. Rodriquex Brothers of Tampico, Mexico, will have the entire Mexican republic as its territory, their first plane being delivered recently. J. K. Ashley, of the Montgomery School of Aeronautics, Montgomery, Alabama, with headquarters at Thomasville, Alabama, also received delivery on a plane and has been appointed dealer.

The American Eagle Aircraft Corporation placed an order with Kinner Airplane & Motor Corporation at the Detroit Show for $225,000 worth of K-5 100-horsepower motors to be used in the new American Eagle type 201 sport and training plane. The American Eagle Company took orders for a considerable quantity of these ships at the Detroit Show and delivery of the engines is to start immediately.

A branch of the Curtiss-Wright Flying Service will be operated at Rock Hill, S. C., with the one at Columbia and Raleigh by William Murchison and C. W. Boney. Besides the taxi and charter service the planes will engage in a general aerial service from the Rock Hill port.

Flight students at the Memphis-Universal Flying School are forming a Glider Club. They will build their own glider in the Universal ground school classroom.

Cone's Plane Sale Repeats Motor Car Sale

The unusual circumstance of selling a man his first automobile and his first plane has been experienced by J. Carroll Cone, sales manager for the American Eagle Aircraft Corporation.

In 1912, Charles Mayer, president of the American Bakery Company of Little Rock, Arkansas, bought his first motor car, for delivery purposes in connection with his newly growing bakery business, from Mr. Cone, who was then in automotive sales work in Little Rock. The sale of the plane took considerable less time and effort, a few minutes against a week of salesmanship. The plane is a four-place folding wing monoplane, manufactured by the American Eagle Company. It is snow white and is used for sales promotion activities by the bakery company, which is one of the largest in the South.

New Standard Appoints Texas Dealers

New Standard Aircraft Corp. of Paterson, N. J., has appointed the Texas Airplane Corp. of Corpus Christi, Texas, distributors on the 5-place and training models of the New Standard line, according to George Daws, sales manager.

Delivery of the first ship was made to Earl Watson and Judd Miller, representing the Southern Academy of Aeronautics, subsidiary of The Texas Airplane Corporation.

Arrangements now are being made for the establishment of an assembly plant for New Standards in the Southwest to cut down ferrying costs.

The Country Club Aero Supply Company, located in the exclusive part of Kansas City's residence district, is a very novel venture in the merchandising of supplies and materials for miniature airplanes. Two years ago this company was started by several air-minded youths of teen age with a stock valued at perhaps $10. Today the stock is enlarged to such a point that it is worth $1,500, and a large trade is carried on.

The Air Travel Bureau, jointly operated by Fort Worth air lines, was closed, at least for the time being, on April 1. The primary object of the bureau—dissemination of information on air travel—has been accomplished.

Aeronautical Chamber Elects Officers

FREDERICK B. RENTSCHLER, president of the United Aircraft and Transport Corporation, was re-elected president of the Aeronautical Chamber of Commerce of America at a meeting of the board of governors on April 16.

New governors for 1930 were elected. They are: E. L. Cord, Stinson Aircraft Corporation; H. M. Hanshue, Western Air Express; Paul Henderson, National Air Transport and Transcontinental Air Transport; Louis H. Mueller, Varney Air Lines, Inc.; Frederick B. Rentschler, Pratt & Whitney Aircraft Company; Charles L. Lawrence, Wright Aeronautical Corporation.; G. B. Grosvenor, Aviation Corporation; T. J. Trippe, Pan-American Airways, Inc.; Carl S. Reed, Fairchild Airplane Manufacturing Company; Fred A. Worthey, Axelson Aircraft Engine Company; Clyde V. Cessna, Cessna Aircraft Company; Edward S. Evans, Detroit Aircraft Corporation; F. H. Russell, Curtiss Aeroplane and Motor Company; L. V. Kerber, Spartan Aircraft Company; J. C. Hunsaker, Goodyear - Zeppelin Corporation; H. L. Williams, Air Investors, Inc.; E. E. Aldrin, Standard Oil Company of New Jersey; Charles H. Colvin, Pioneer Instrument Company; E. E. Wilson, Hamilton Standard Propeller Company; S. L. Gabel, Summerill Tubing Company; J. R. Fitzpatrick, Haskelite Manufacturing Company; John R. Cautley, Bendix Company; Carl B. Fritsche, Aircraft Development Corporation; Reed Chambers, U. S. Aviation Underwriters; P. G. Kemp, Central Air Terminals, Inc.; W. E. Metzger, National Glider Association; and William P. MacCracken, New York Rio and Buenos Aires Air Lines.

B. F. Castle, of Great Lakes Aircraft Corp., was elected treasurer; John R. Cautley, of Bendix Brake Company, secretary; and Luther K. Bell was reelected general manager. Vice-presidents elected and the districts they represent are: Louis H. Mueller, northwest; H. M. Hanshue, southwest; Paul Henderson north central; G. B. Grosvenor, northeast; J. T. Trippe, southeast; Edward S. Evans, east central ;and L. V. Kerber, south central.

Governors elected to the Chamber Executive Committee are: Rentschler, Hanshue, Lawrence, Grosvenor, Evans, Hunsaker and Colvin.

Governors of the Aeronautical Exposition Corporation reelected Rentschler as their president; Lawrence, vice-president; Cautley, secretary; Castle, treasurer; Bell, general manager; and Frank J. Wash, assistant treasurer and secretary. The expositions corporation executive committee for 1930 includes J. C. Hunsaker, of the Goodyear-Zeppelin Corporation, in addition to the officers elected at the meeting.

The election of officers followed the seating of governors for 1930 at the adjourned meeting of the Chamber held late in March.

Gasoline consumed by aircraft engines in civil and commercial aeronautical operations in the four-year period of 1926-1929, is estimated at 38,811,954 gallons by the Aeronautics Branch. The amount of engine lubricating oil consumed was estimated at 1,941,980 gallons.

Wasp powered Boeing fighters of the 95th Pursuit Squadron that climbed in formation to an average altitude of 29,000 feet during the recent Army Air Corps maneuvers at Mather Field, Sacramento, California. (Air Corps photo)

Army Fighting Planes Set New Altitude Record

A new world altitude record for altitude combat formation was established by nineteen Boeing P-12 Wasp-powered single seater fighters April 12, above Mather Field, during Air Corps maneuvers.

These nineteen Boeings, in formation, reached altitudes between 27,500 and 28,000 feet. The temperature was minus forty centigrade. The complete trip was made in formation. Press reports stated that Capt. H. M. Elmendorf, who lead the record breaking flight, continued to climb when thinning atmosphere halted the formation flying and reached an altitude of 33,000 feet. The previous individual record, also made with a Boeing P-12, was 31,700 feet.

For the first time in the history of aeronautics, high altitude formation flying was directed by radio.

New York Air Show Visitors Enjoy Airplane Rides

A drive that resulted in thousands of people taking airplane rides over metropolitan New York was sponsored by the Aeronautical Chamber of Commerce of America during the New York Air Show, May 3 to 10.

Cooperating with the Aeronautical Chamber of Commerce were five airports and six flying organizations. The organizations assisting the Chamber of Commerce in the drive were: Curtiss-Wright Flying Service, Newark Airport, Eastern Aeronautical Corporation, Westchester Airport Corporation, Atlantic Air Services, Inc., and Roosevelt Flying Field.

Each visitor upon entering the show was given a stub from his ticket which was redeemable as part fare for an airplane ride. The reduced rates were in effect all during the air show and resulted in many people taking rides who had never ridden in a plane before. It is felt by the Chamber of Commerce that this will have a far reaching effect in increasing nation-wide use of air travel, air mail and express.

The movement was linked with the New York Air Show which featured air transportation, with a huge $2,000,000 display of aircraft, motors and accessories.

Automotive Parts Jobbers Active in Aviation

TAKING advantage of an opportunity to combine a visit to the All-American Aircraft Show in Detroit with a business meeting, the Aeronautical Committee of the National Standard Parts Association met at N. S. P. A. Headquarters on April 9, under the chairmanship of E. A. Watkins of the Watkins, Manufacturing Company, Wichita, Kansas.

With the information before them that already approximately 40 per cent of the manufacturer members of the N. S. P. A. are producing parts, tools or material used as original or replacement equipment, or in the maintenance of airplanes, the attention of the committe was devoted largely to the possible place for the already established automotive parts jobbers as a wholesaler to the aviation industry.

Discussion brought out the opinion that present established jobbers of automotive parts are particularly well fitted in many cases to take on this new line.

This opinion, however, was supplemented by the thought that at the present time there is not yet available a sufficient volume of business in replacement engine parts to warrant investment in a stock of them by the average automotive parts jobber.

On the other hand, shop tools and equipment for servicing the automobile motor are largely the same as those needed for servicing aviation engines and the automotive parts jobber is in an excellent position to handle airport service station requirements along this line, according to the committee.

The members of the committee, in addition to Chairman Watkins, are: B. N. MacGregor, Packard Electric Company; R. W. Conroy, Russell Manufacturing Company; Allen Morton, American Hammered Piston Ring Company; J. G. Young, Hutto Engineering Company; L. H. Phelps, Phelps-Roberts Corporation; George Newbold, business manager, Aviation.

Flying School Opened At Bates Field

The Hutchinson Flying School has started operations at the Mobile Municipal airport, Bates Field. The incorporators of the school are Jack Hutchinson, Dr. Miller Reese Hutchinson and Vincent Schmidt. They are conducting a ground school, flying school and doing aerial taxi service, using Fairchilds, Travel Airs and Great Lakes Trainers.

The University Military School of Mobile conducts a ground school course in connection with the Hutchinson Flying School.

Favorable Action Promised on Gasoline Tax

MORE than a score of governors and United States senators have replied to the appeal of Frank Phillips, head of the Phillips Petroleum Corporation, for a uniform policy of taxation of aviation gasoline. Taken as a whole the replies promised support of the measure. Replies were received from governors of New Mexico, Nevada, Tennessee, Arkansas, Arizona, Kansas, Wyoming, Massachusetts, Delaware, New Hampshire, South Carolina, New York, Georgia, Idaho, Pennsylvania, Alabama, Texas, Ohio and others.

Baker is Sales Manager for Glenn L. Martin

Warren L. Baker, of Baltimore, Md., has been appointed sales manager of the Glenn L. Martin Company, aircraft manufacturers of Baltimore, Md., as part of an expansion program to increase both American and foreign markets for Baltimore-built military and commercial airplanes. Mr. Baker will have full charge of the sales department of the Martin company and will devote most of his time to building up American and foreign markets for planes built here, according to Glenn L. Martin, founder and head of the concern which bears his name. Mr. Martin said he believed that Baltimore in a few short years will be one of the greatest export points for aircraft in the world.

Glider Club Organized at Winston-Salem

The Lasater Glider Club has been organized at Winston-Salem and plans were announced recently for the purchase of a primary training glider. By-laws adopted at a recent meeting provide for a membership fee of $20, which will go towards the purchase of the glider. Officers of the club include Dr. J. E. Kerr, president; Dr. G. C. Cooke, vice-president; Sam Strawn, treasurer; William T. Ritter, secretary; H. B. Poindexter, technical chairman; A. W. Price, Hoyle C. Ripple and L. R. Fisher, directors.

Aviation Course Added by Washington College

Aviation has been added to the curriculum of Washington College, located at Chestertown, Md. More than 200 students have enrolled in the course, including a number of girl students. Aviation classes will be held three times a week, and will be held in conjunction with the Baltimore, Md., base of the Curtiss-Wright Flying Service. Lieut. L. M. Rawlins, flying representative of the Curtiss-Wright Flying Service, has been appointed instructor of aviation at the college. He commutes, by air, from Baltimore to Chestertown, which involves flying across the Chesapeake Bay.

Dallas Aviation School Gets New Eagle Rock Glider

C. E. Harmon, general manager of the Dallas Aviation School, recently initiated the school's first glider, an Eagle Rock with 32-foot wing spread. The new glider was received recently, with four new Eagle Rock training ships installed for student instruction. The Dallas school has an enrollment of over fifty students. All branches of aeronautics are taught and glider instruction is to be added under capable instructors and with new equipment of latest design.

Kansas City Aircraft Co. and Bird Wing Merge

Consolidation of the Kansas City Aircraft Company with the Bird Wing Commercial Aircraft Company of St. Joseph, Mo., was announced recently by G. L. Chadburn, of Kansas City, chairman of the Kansas City Aircraft Company. The new company plans an expansion program. Capital stock of the Bird Wing Company now is $100,000 and will be increased to approximately $500,000, according to officials.

The Art Goebel School of Flying at Kansas City, Missouri, announces the appointment of J. V. C. Gregory as the new manager of the school. Mr. Gregory was formerly manager of the Braley School of Flying at Wichita, Kansas. Paul Hewitt, who resigned the position, is now the manager of the New York City branch of the Parks Air College.

Latest Developments in AIRPLANES AND ACCESSORIES

Metal Lockheed Vega Made in Detroit

AN ALL-METAL Lockheed Vega will be manufactured by the Detroit Aircraft Company in Detroit, as a supplementary model to the ones made in the California factory at Burbank.

The new model Vega is similar to the wooden job except that the entire fuselage is of all-metal construction. The wings and tail surfaces will continue to be built of wood. Tests have been under way at the Grosse Ile airport for the past three months, and performance was found to be identical with the wooden model. Measurements of the metal job are the same as the wooden job but the metal plane is aproximately thirty pounds lighter. The new model is powered with the Pratt and Whitney Wasp 425 h. p.

The fuselage of the metal plane will be built and assembled in the Detroit plant, and the wings and landing gear and accessories will be shipped to Detroit from the California plant, where the Lockheed Sirius and Air Express will continue to be built.

The several models of the Lockheed were on display at the Detroit show April 5 to 12, along with planes manufactured by other units of the Detroit Aircraft Corporation.

New Command-Aire Model Receives Certificate

One of Command-Aire's new models, designated as type BS-14, was flight tested and granted approval by the Department of Commerce April 14.

This ship, which is designed to be a strictly sport airplane, is the twelfth model Command-Aire to be granted an Approved Type Certificate by the Department of Commerce.

The plane is powered by a Warner 110 h. p., seven-cylinder radial air-cooled motor. It is designed as a two-place ship, but by slight changes in the cowling can be made to accommodate three persons with ease.

It incorporates several ideas new to the Command-Aire models, and was designed with the idea in mind of using it as a practical testing laboratory for numerous ideas which involve radical changes from previous practice.

The ship is slightly smaller than the standard model Command-Aires, and considerably lighter in weight. Both of these characteristics have a tendency to increase its performance. It is not expected that this model will be put into production as it is a very expensive ship to build.

Aeronca Makes Long Non-Stop Flight

A new Aronca C-2, powered with a 30-horsepower Aeronca motor, was flown recently from the factory at Cincinnati, Ohio, to Roosevelt Field, where it was delivered to the Roosevelt Flying School.

The flight from the Cincinnati factory was made with only one stop for fuel. Pilot Huffman, of the Embry-Riddle Aircraft Company, brought the Aeronca down in a small field near Plainfield, New Jersey, refueled at a roadside gas station, and completed the flight to Roosevelt Field. The trip from Cincinnati to Plainfield, just short of New York, was made in 9 hours and 15 minutes.

The all-metal Lockheed Vega

Great Lakes Bombers Ordered by Navy

The Great Lakes Aircraft Corporation has delivered the first of a series of eighteen three-purpose bombing planes to the United States Navy. These bombers are a modification of the three-purpose bomber

Navy three-purpose bomber made by Great Lakes

which has been used in the Navy for a number of years. They have folding wings so ingeniously arranged that when folded back the wings clear the decks of the aircraft carrier.

The Bombers are designed to carry a heavy torpedo or a number of bombs. They are heavily armed and ruggedly built so that they can properly be called "Battleships of the Air."

The Aeronautics Branch of the Department of Commerce has awarded approved type cirtificate No. 308 to the Lockheed Division of the Detroit Aircraft, for the Metaltype model of the Lockheed Vega, which was shown for the first time to the public at the All-American Aircraft Show at Detroit.

New Low-Wing Monoplane Tested by Boeing

Boeing Airplane Company is preparing to test fly an all-metal low wing Hornet-powered monoplane to carry a payload of 2,000 pounds and cruise approximately 145 m. p. h. Later a second identical model will be flown. It, however, will carry cargo and passengers. The model is radically different, in many features of design, from previous planes built by Boeing for the commercial market. Boeing executives expect the plane to rank as one of the most outstanding models it has produced.

New Spartan Deluxe Cabin Monoplane

THE Spartan Aircraft Company has recently started production of the C-4-225, a deluxe cabin monoplane powered with the Wright Whirlwind 225 h. p. engine. This model was shown for the first time at the recent All-American Aircaft Show at Detroit.

Specifications are as follows:

Type: Four place cabin monoplane, A. T. C. No. 310.

Dimensions: Length overall, 31 ft. 6 in. Height overall, 9 ft. Wing span, 50 ft. Wing chord, 6 ft. 8 in.

Area: Wings, including ailerons, 299 sq. ft.

Weights: Empty, 2,325 lbs. Useful load, 1,190 lbs. Gross weight loaded, 3,515 lbs. Wing loading per sq. ft., 11.7 lbs. Power loading, per sq. ft. 15.6 lbs.

Power plant: Wright Whirlwind-Seven. Rated 225 h. p. at 2,000 r. p. m. Type, seven-cylinder air-cooled. Fuel capacity, 85 gallons. Oil capacity, 6 gallons.

Performance: High speed, 129.7 m. p. h. Landing speed, 51 m. p. h. Cruising speed, 109 m. p. h. Climb, at sea level, 905 f. p. m. Service ceiling, 14,200 ft. Cruising range, 615 miles.

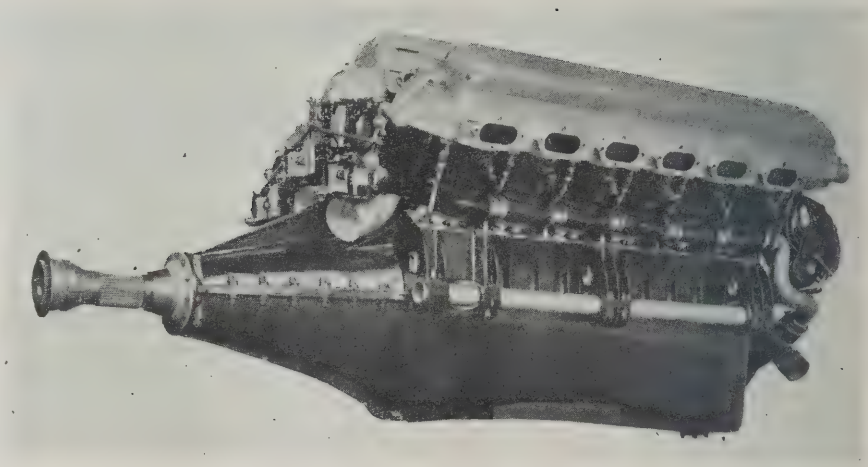
Construction: Welded chrome steel tubing, fabric covered wings, Clark Y airfoil section. Spruce I beams and spars. Ribs, spruce, fabric covered.

New Supercharger is Approved

Ralph De Palma, famous automobile racing driver, in cooperation with engineers of the American Cirrus Engines, have developed a supercharger for aircraft, automobile, and marine engines, which according to records of the Cirrus plant at Maysville, Michigan, increases the power of motors from 20 to 30 per cent and affords a fuel reduction of 10 per cent.

The supercharger has passed the Government tests at the Naval Aircraft factory at Philadelphia, and has received an approved type certificate from the Department of Commerce.

Rights to the supercharger are held by the American Cirrus Engines.



An 1,800 H. P. Aircraft Engine

ABOVE is shown the 1,800 horsepower Isotta-Fraschini Aircraft motor exhibited at the New York Aircraft Show May 3 to 10. It is by far the most powerful aircraft unit available. It is designed for use by Italian Military Aviation for high altitude work. It is an absolute novelty and a special permit had to be obtained from the head of the Italian Government to enter it in the Madison Square Garden Show. It is said to weigh less than three-quarter pound per horsepower. Two other high powered motors of 1,000 and 1,100 horsepower were exhibited by Isotta-Fraschini.

Fokker Announces Many Price Reductions

Price reductions on Fokker cabin transport planes, ranging from $4,000 to $13,000 were announced by Captain E. V. Rickenbacker, vice-president in charge of sales for Fokker, on April 6. The giant F-32 is exempted from the price reduction.

The rate reductions on various models are as follows: Standard Universal, 7 places, $4,000; Super-Universal, 7 places, $4,300; F-14-A Mail plane 9 places, $4,000; F-11-A Flying Boat, 8 places, $7,500; F-11-A Amphibion, 8 places, $8,225 and the F-10-A Tri-motor, 14 place, $13,000.

Prices Announced On Davis Monoplanes

The Davis Aircraft Corporation, of Richmond, Indiana, has announced the following revision in prices on Davis Monoplanes, to take effect immediately:

Type D-1, powered with LeBlond 60 radial motor, now $2,995; formerly $3,285. Type D-1-85, powered with new LeBlond 85 radial motor, now $3,595; formerly $3,685. Type D-1-K, powered with Kinner 90 radial motor, now $3,995; formerly $4,185. All prices are Flyaway at Field, Richmond, Indiana.

The new Spartan Model C-4-225, the company's first cabin model, which made its debut at the Detroit Aircraft Show

The Bird Wing Commercial Aircraft Corporation of St. Joseph, Missouri, have finished their first primary glider, which was test flown at the St. Joseph Field recently. The first product of the company is of the primary training type, but according to Carl Wolfley it can, with slight changes, be converted into a small motor-powered plane.

The Inland Aviation Company has completed plans for a special racing job to compete in the All-American Flying Derby for Cirrus motored ships to start from New York July 21, south to Mexico City, up the west coast, to Montreal and back to New York about August 1.

New Great Lakes OPERATING DEALER PLAN *means greater* PROFITS

Improved Great Lakes Trainer
New low price **$3150**

HERE'S a square-shooting franchise that gives the alert Operating-Dealer a chance to show a worth-while profit at the end of every year! Here's a franchise written for the dealer . . . backed by support that really means something!

• The new, improved 1930 model Great Lakes Trainer is the ideal flying school ship; suitable for both advanced and elementary training. It's economical to buy, economical to operate. It's neat and trim . . . handles to suit a king's taste! At $3150 (flyaway, Cleveland) the Great Lakes Trainer has an instant appeal to the graduate student buyer . . . almost sells itself. And even at this low price, there's an ample margin of profit for you. National advertising helps build good will for the Great Lakes Trainer; performance of the ship itself builds ready sales.

• Cash in on this great opportunity. Get into the money-making end of flying. We'll tell you how to go about it; how to get your school on a paying basis; how to interest capital in your enterprise; how to maintain a profitable service hangar. Write us a letter, telling all about yourself, your experience, your plans and the flying situation in your community. Address Great Lakes Aircraft Corporation, 16460 St. Clair Ave., Cleveland, Ohio.

Manufactured under U. S. Department of Commerce Approved Type Certificate Number 228

GREAT LAKES AIRCRAFT
CORPORATION CLEVELAND
Contractors to the United States Army and Navy

Waco Model F Is Approved

THE Waco Aircraft Company has been granted Approved Type Certificate No. 311 on their model F with the Warner "Scarab" engine. The same model ship but with the Kinner 100 h. p. engine has been given Approved Type Certificate No. 313.

The new Waco is a 3-place open cockpit biplane employing the modified Heinkel truss in the wing construction. In size it is slightly smaller than the other models, the wing area being 240 sq. ft. against 288 sq. ft. The lines of the new mode are very pleasing to the eye. The long streamline headrest, which is part of the turtle deck, lends a racy appearance. The modified Heinkel truss of the wings simplifies the number of exposed wires and adds to the clean-cut lines.

Greater visibility forward and down is obtained by the 50 per cent stagger of the wings, the cut-out center section increasing the visibility overhead. A new and improved aileron control has been designed with the distinctive shape of the ailerons producing a Taper Wing effect. Molded Pyralin windshields, a departure from the conventional types, not only increase the protective feature but also set off the fuselage gracefully.

The neat curve of the rudder is carried out in the vertical fin streamlined into the fuselage, the horizontal stabilizer sweeping back to the flippers. A tail wheel makes it a "one-man" airplane for handling on the ground.

The undercarriage, of biped construction, is supported by oil and spring shock struts with air wheels and brakes as standard equipment The curve of the fuseage is carried out in the cowling up to the engine, the cowling being divided into four sections for easy accessibility to the engine.

The new Waco Model F, powered with Kinner or Warner Scarab

The performance of the new model F is pleasing. The tail is off the ground almost as quickly as the throttle is opened. In 150 feet the ship starts up in a climb that carries you 1,000 feet the first minute. Leveled off and wide open, it clicks off 115 miles per hour. By adjusting the horizontal stabilizer, the ship flies evenly, smoothly, "hands off" as long as desired.

The landing speed is 32 m.p.h. There is no tendency to "float," making it impossible to judge landing. Instead, it comes in slowly, settles down comfortably and as the stick is pulled back to put the tail wheel on the ground, the Model F "slows down to a walk"—to a dead stop in less than 125 feet.

Specifications are as follows:

Dimensions: Length, 20 ft. 8 ins. Height, 8 ft., 4 ins. Span, 29 ft. 6 ins. Chord, 57 ins. Wing area, 240 sq. ft.

Performance: Top speed 115 miles per hour. Cruising, 95 miles per hour. Landing, 32 miles per hour.

Weights: Empty with Kinner, 1,095 lbs. With Warner, 1,110 lbs. Gross weight, 1,900 lbs. Gas capacity, 32 gals. Oil capacity, Kinner, 3 gals. With Warner, 4 gals.

The American Built Savoia-Marchetti

THE American built Savoia-Marchetti S-55, fourteen-passenger flying boat, one of the largest manufactured in this country, was shown for the first time in an aircraft exhibit during the recent New York Aircraft Salon in Madison Square Garden.

The S-55 twin-hulled seaplane is the same type that General Francesco de Pinedo used on his celebrated tour of four continents a few years ago. The American built S-55 has previously made a flight to the middle west for the All-American Aircraft Exposition, where it was demonstrated for show visitors.

Of twin hull construction, the transport ship seats seven passengers in each cabin, with the pilots' compartment in the center section of the wing, between the hulls. The ship is a monoplane, powered with two Isotta-Fraschini motors developing 500 h. p. each. In its early flights the Savoia-Marchetti S-55 has maintained a cruising speed of over 123 miles per hour, which is considered exceptionally high speed for a seaplane of its size.

The twin-hulled 14-passenger Savoia-Marchetti S-55

American Eagle Featuring Two Models

The American Eagle Aircraft Corporation is concentrating on the manufacture of two new models introduced early in the year, the four-place monoplane and the biplane, Kinner powered.

Approved type certificates Number 301 and 302 have been awarded the company by the Aeronautic Branch, Department of Commerce, for the manufacture of the monoplane powered with the Wright J-6 Five and Continental Seven engines, respectively. The biplane is built under approved type certificate Number 293.

AIRPORTS

ORGANIZATION CONSTRUCTION MANAGEMENT

1. We assist the local community in solving its airport problems, including the ORGANIZATION of local companies preparatory to the building of their airports.

2. We contract for preliminary SURVEYS, DESIGNS, and CONSTRUCTION of airports.

3. We contract for the OPERATING MANAGEMENT of airports and direct their activities over a period of years. Co-ordinate flying activities of your localty, including air transport line operations.

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New OX5 motor $675. Moderately used excellent condition OX5 $450. Good, used OXX6 motor with Simms magnetos $375.

Dandy new carburetor for OX5, $30, or slightly used ones $25. Rebuilt Berling 8 cylinder magnetos for OX5 $40. OX5 new exhaust manifolds $13 per pair. Propeller hub assembly $12.50. Have complete stock of Miller products for OX5 and OXX6. 26 x 4 unused surplus tires $4.50 each. New tubes $2.25 each. 750 x 125 unused tires $7.50. New tubes $3.25. Surplus unused tubes $1.25.

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COMPLETE WITH LAUNCHING EQUIPMENT

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Waco Announces New Primary Glider

THE Waco Aircraft Company, Troy, Ohio, announce the addition of a primary training glider to their line of aircraft. It will sell for $385 F. O. B. Troy, Ohio, crated ready for rigging.

The fuselage is constructed of aircraft steel tubing, strongly braced against all stresses. The skid consists of an elongated elliptical form diagonally braced. The landing shoe of second-growth hickory is fastened to the bottom runner by means of clips.

The wings are made of spruce spars and web ribs, internally braced with hard wire and are fabric covered, doped and sprayed with aluminum paint. Square wing tips are less likely to damage in case of a wing-low landing, it is said. The control cables are located outside the wings, where they can be easily inspected.

A new type wing skid of tubular steel is fastened by a tripod arrangement to each wing. The skid proper is held in position by a rubber shock cord that gives as the weight depresses it and tends to equalize the wings, as well as preventing any damage. The skids also support the wing when the glider is at rest. The seat has five-inch metal sides and is equipped with a safety belt. A padded backrest is provided. A foot rest prevents the feet from slipping off the rudder bar and assures a restful position.

A new positive-type towing hook situated on the nose of the fuselage, is so designed as to be foul-proof. Should the tow line become fouled back of the hook, it automatically opens. A launching hook for shock-cord use is placed beneath the towing hook. According to tests run at the factory, the take-off speed is 20 miles per hour, landing at the same speed. The sinking velocity is computed at three feet per second, with the gliding angle 15 to 1. The wing span is 36 feet, chord 62½ inches, overall length 21 feet, wing area 184 sq. ft. and weight approximately 175 lbs. Quantity production is being started immediately, with prompt deliveries assured.

The Waco primary training glider, recently added to the Waco line

New Aeronautical Books

"Stunt Flying"

The Goodheart-Wilcox Company, Inc., Chicago, has just issued an interesting book entitled "Stunt Flying," by Captain Richard Duncan. The book takes the student through the primary lessons of flight; gives some sound advice as to maintaining flying speed and control of the plane in the air, and carries the student through his training period up to the solo point. The more popular "stunts" are explained and illustrated.

American Airports, published by Taylor, Rogers and Bliss of 40 49th Street, New York, will appeal to those contemplating entering the field of airport designing and construction, since it contains the 44 prize-winning and other drawings from the Lehigh airport competition, which was the first national contest for designs of modern airports held in the United States. There is a comprehensive analysis of the designs by Archibald Black to assist in the interpretation and study of the 44 airport plans contained in the book. Introduction to the book was written by Clarence M. Young, Assistant Secretary of Commerce for Aeronautics. The book contains 96 pages, with 73 full page plates. Price $3.00.

Gulf Aviation Atlas

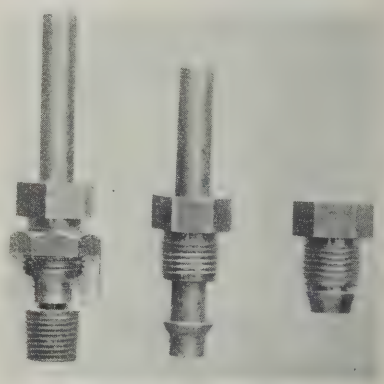
An aviation atlas showing maps of the United States, Europe, North and South America, in which commercial airways are shown, has been issued by the Gulf Refining Company in pamphlet form, for distribution to those interested in aviation. The paths of the history-making planes on the world's most notable flights are shown, as well as a chronological review of aviation history, and photographs of famous planes and fliers depicting aviation progress from the beginning of flight by man. Statistics and charts of the comparative development of aviation in the United States and foreign countries and a comparison of air mail and railroad mail time between the principal cities also are given.

Catalogues containing illustrations in colors and descriptive matter with specifications have been issued by the various units of the Detroit Aircraft Corporation Every plane in the DAC line is illustrated and described in the new catalogues.

New Connection Added by Sky Specialties Corp.

The Sky Specialties Corporation, manufacturers of the Heywood starter, have added to their list of products the "Hi-Duty Sky Service Connection," designed for copper tube, oil and fuel lines.

For the last three years they searched the market in vain for a vibration-proof tubing connection, as their lines were breaking at the connection constantly.



Hi-Duty Service Connection

This connection is of the compression type, composed of two parts: (1) The body is a forging internally machined and threaded; (2) the nut and sleeve are machined in one piece. The sleeve is the cone-shaped part on one end of the nut, under cut so that it will easily detach itself and round the tube into shape during the process of tightening into the body and is permanently detached in about one turn after the cut begins to drag or turn hard, making a very slight indentation on the copper tube. No soldering or welding is necessary. It is easily installed in the most difficult place where it is almost impossible to use a soldered connecton.

They have used this "Vibration-proof" connection (and that is exactly what it is) over a period of one year and to their knowledge there has not been reported a broken tube.

The "Hi-Duty Sky Service Connction" has been approved by the Department of Commerce for use on oil and fuel lines of licensed aircraft.

Six Fleet standard model sport planes are being delivered to Claude E. Carter of Harlingen, Texas, to be used in student training at the International Airport at Harlingen.

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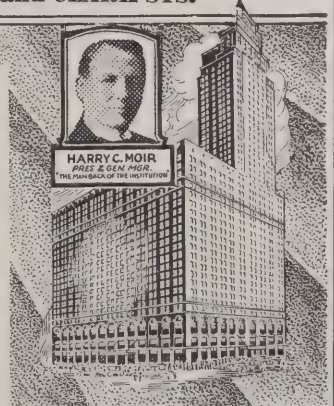

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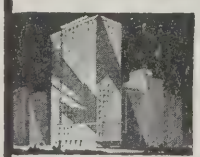

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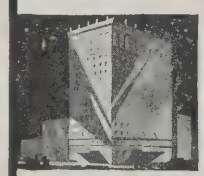

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Advertisers' Index

A

Aero Supply Mfg. Co., Inc. ..... *
American Aeronautical Corp. ..... *
American Eagle Aircraft Corp. ..... *
Arkoma Airways, Inc. 53

B

Bowman & Company ..... *

C

Carolina Metal Culvert Co., Inc. ..... *
Cessna Aircraft Co. 53
Consolidated Instrument Co. ..... *
Crouse-Hinds Company ..... *
Curtiss-Robertson Airplane Mfg. Co. ..... *
Curtiss-Wright Flying Service ..... 2 and 3
Curtiss-Wright Sales Corp. 4

D

Detroit Aircraft Corp. 1

G

Gilmore Oil Co. .....Inside Back Cover
Great Lakes Aircraft Corp. 51

H

Harrison-Wright Co. 55
Harry Bros. Co., of La. ..... *
Heiss Hotel System 56
Hotel Tuller 56

I

Ingalls Iron Works Co. 55
International Airports Corp. 53

L

Logan Aviation Co. 53

M

Miami Air College ..... *
Miami Airplane & Supply Corp. ..... *
Morrison Hotel 55
Moth Aircraft Corp. ..... *

N

New Standard Aircraft Corp. ..... *

P

Packard Motor Car Co. 6
Parks Air College 1
Parks Aircraft Corp. ..... *

R

Rich Associates, G. Gifford 53
Ronald Press Co. ..... *
Russell Manufacturing Co. ..... *
Ryan Aircraft Corp. ..... *

S

Service Steel Company 55
Sky Specialties Corp. .....Back Cover
Southern Air Transport Co. ..... *
Spartan School of Aeronautics 55
Stanavo Specification Board, Inc. ..... *

T

Texas Company .....Inside Front Cover
Titanine, Inc. 55
Travel Air Co. 4

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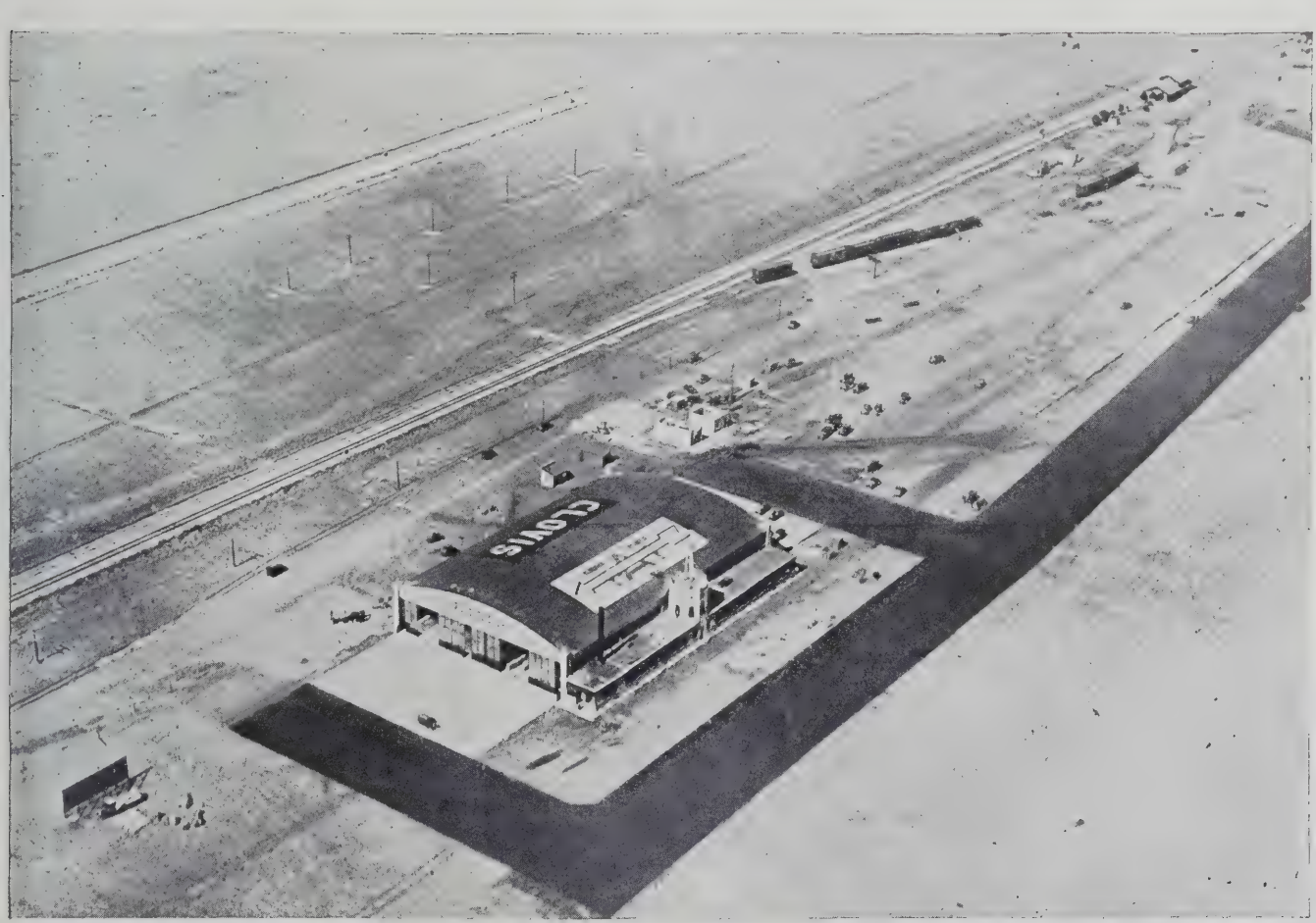
A view of the TAT Airport at Clovis, N.M., showing Runway Surfaced by Gilmore.



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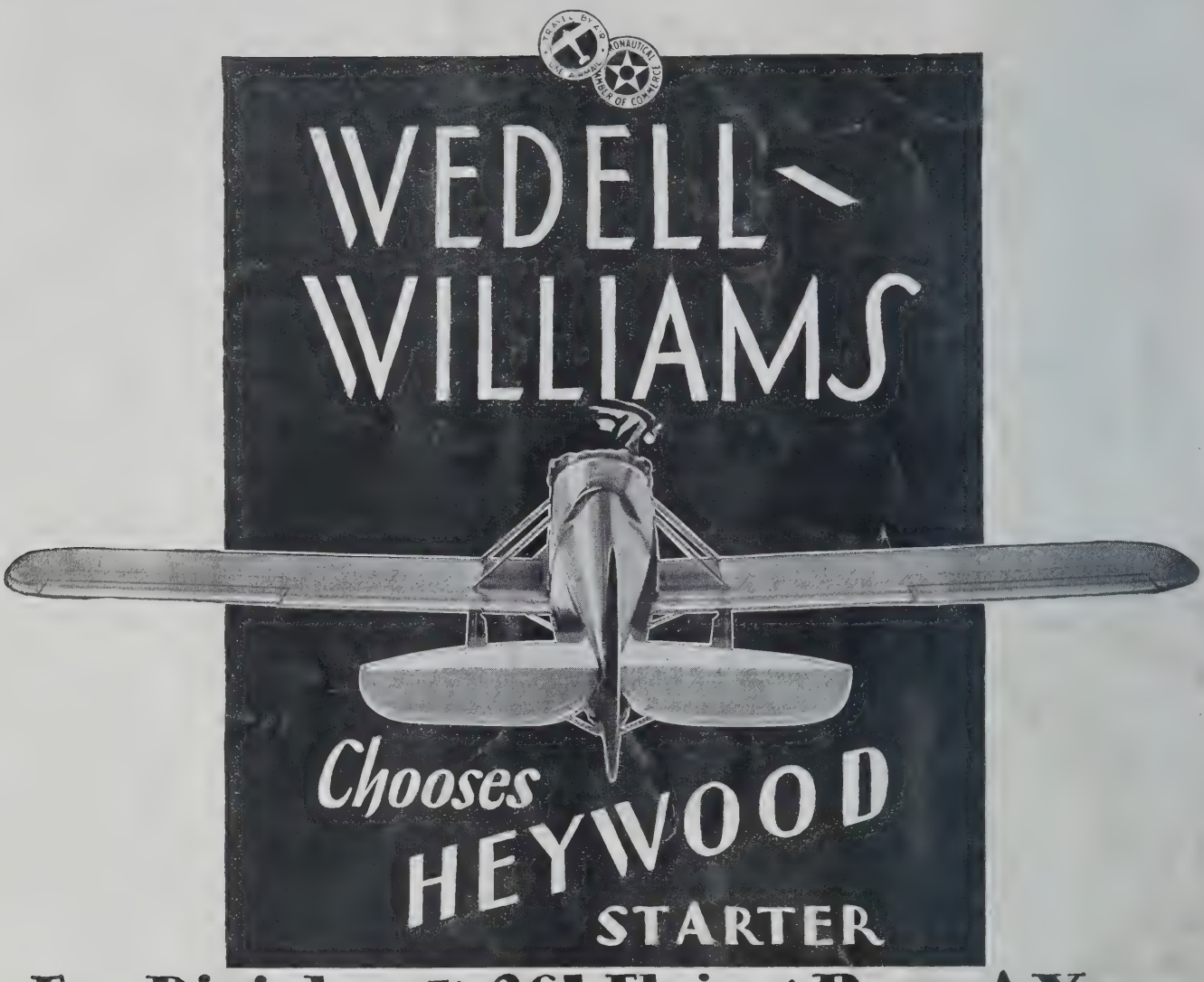

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SOUTHERN AVIATION

The Blue Book of Aeronautical Activities in the Southern States

JUNE 15, 1930

A-T 4 pursuit planes in flight near San Antonio.
Photo by 22nd Photo Section, U. S. Army Air Corps

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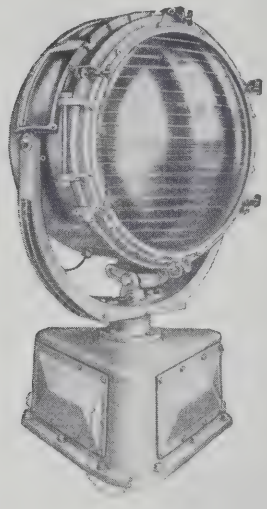

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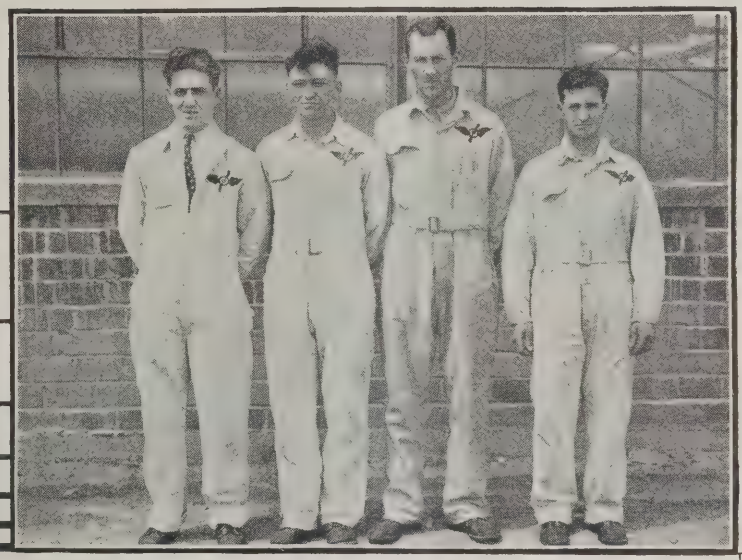

Four graduates of the Parks Air College Airplane Engine Mechanics' School who are now employed in the factory of the Lockheed Aircraft Division of the Detroit Aircraft Corporation at Burbank, Calif.
Left to right, they are—H. L. Gammill, S. H. Reichert, Hugo Carlson, and L. H. Larivee.

WHEN you decide to make aviation your life work—whether as a pilot or as an airplane and engine mechanic—the first thing to consider is, "Where can I get the training which will mean *sure success* to me?"

Think *first* of Parks—the finest and most complete commercial aviation school in the country—one of the first to be licensed and approved by the Department of Commerce.

Parks training has fitted many men for responsible jobs in the aviation industry—as pilots, airport executives and mechanics.

Sincerity and thoroughness are the hallmarks of PARKS training. Every course is under the personal supervision of Oliver L. Parks. Every instructor is licensed by the United States—a man of proven character and ability. And before the eyes of every man is kept constantly the fact that Parks Air College has a mission—that its superior experience and resources impose upon it the moral obligation of giving its students the finest possible training—that to it the aviation industry is looking as the progressive leader of the field of aeronautical instruction.

A group of Parks Air College instructors.

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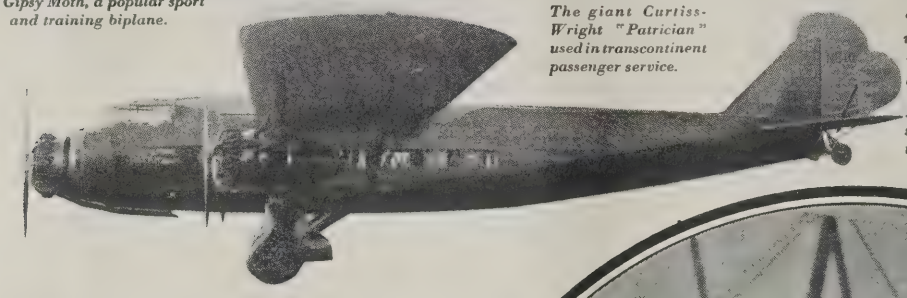
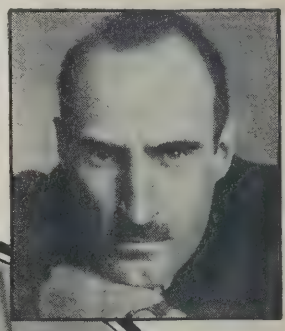
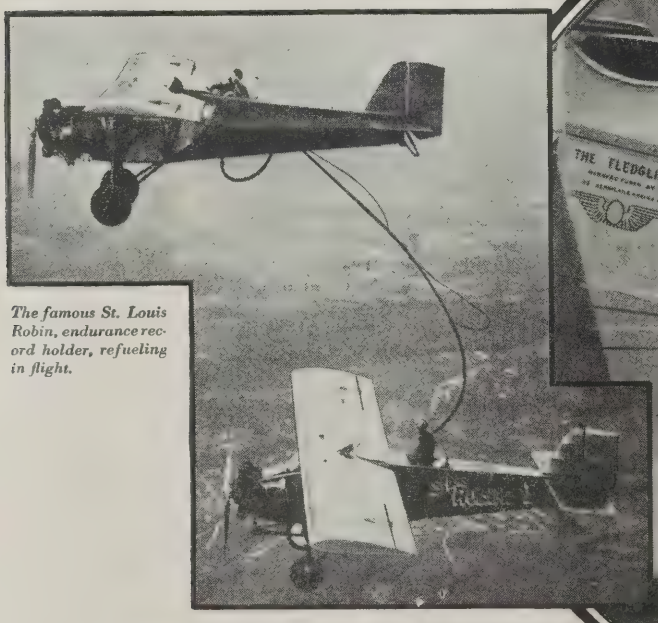


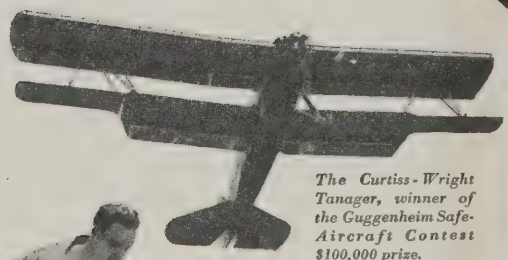
Chas. S. "Casey" Jones, world-renowned pilot and president of Curtiss-Wright Flying Service, supervises its training activities



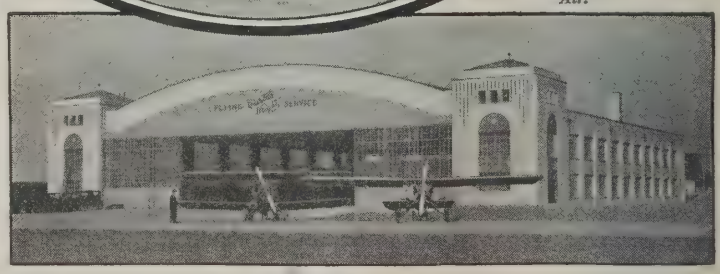


The famous St. Louis Robin, endurance record holder, refueling in flight.

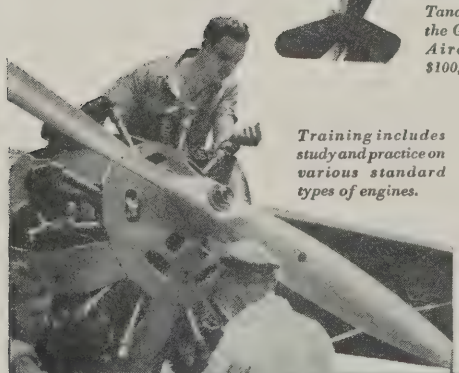
Ready for flight. Curtiss-Wright training methods are based on years of instruction experience. They make "Masters of the Air."



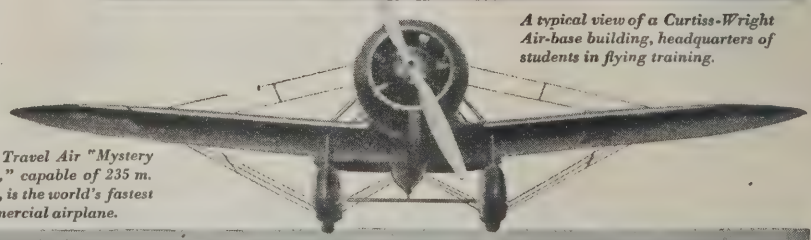
The Curtiss-Wright Tanager, winner of the Guggenheim Safe-Aircraft Contest $100,000 prize.



A typical view of a Curtiss-Wright Air-base building, headquarters of students in flying training.



Training includes study and practice on various standard types of engines.



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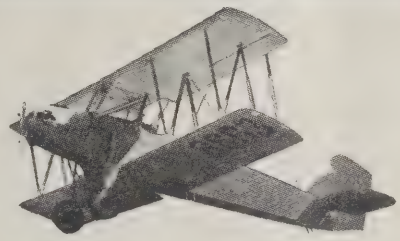

"TRAINED by Curtiss-Wright" identifies you as a master pilot in this era of wings. It means that you have been trained by the "world's oldest flying organization"—that you are a member of a flying fraternity whose membership includes many of the greatest names in aviation. Curtiss-Wright training means thorough knowledge of planes and engines, outstanding flying ability, supreme confidence in every circumstance.

The famous organization known today as Curtiss-Wright has advanced directly over a period of nearly thirty years from the first discoveries and developments of two of aviation's greatest pioneers. Curtiss-Wright is a leader in modern aeronautical progress. You have learned from headline and picture that the Curtiss-Wright "Tanager" plane recently won the Guggenheim safe-airplane prize of $100,000. The Curtiss-Wright engineered Travel Air "Mystery Ship" proved itself the fastest commercial airplane ever built. The Curtiss "Robin" holds the world's endurance record. These exploits are indicative of the vast resources of the organization with which you enroll for training.

As the world's largest manufacturers of aircraft and engines, largest owners and operators of airports, foremost instructors in mastery of the air, Curtiss-Wright is able to offer you unusual advantages for training. Curtiss-Wright ground and flying schools, forty in number, are located throughout the United States. All are so completely equipped that they can be truthfully described as Universities of the Air.

Your ground training comprises every phase of aviation—theory of flight, aircraft construction, operation and maintenance of engines, rules of the air, weather conditions and elements of navigation.

Veteran flying instructors with hundreds of hours of flying instruction to their credit will impart to you their knowledge and skill. There is no "run of the mill" in Curtiss-Wright training methods. Every student is instructed as an individual and advanced steadily to an ability worthy of the term, "trained by Curtiss-Wright."

New, modern training planes that encourage confident control are in use in every school. In addition, you will have an opportunity to study at first hand many types of planes—from the light, swift sport planes to the giant air liners. You will learn about the operation of airports and transport service. Every minute of your training will be pleasant as well as instructive.

The period of training is so planned that it may be modified to suit your convenience. If, by reason of other duties, you are unable to devote time daily to training, hours may be arranged for you during spare time or on Sundays. Many men in business and industry have mastered the air during spare time.

The cost of Curtiss-Wright courses is reasonable, and to place it within the means of all, term payments may be arranged to distribute the expense over a period of six months to two years, depending on the course taken.

Curtiss-Wright cordially invites you to visit any of its flying schools and learn at first hand the completeness of its facilities and methods. Talk with any Curtiss-Wright trained pilot. You will find him a thoroughly competent flyer, proud of the "flying start" he received from Curtiss-Wright.

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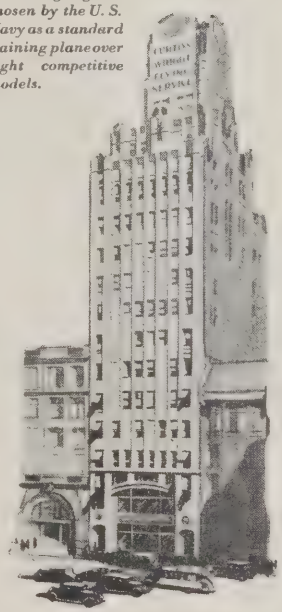

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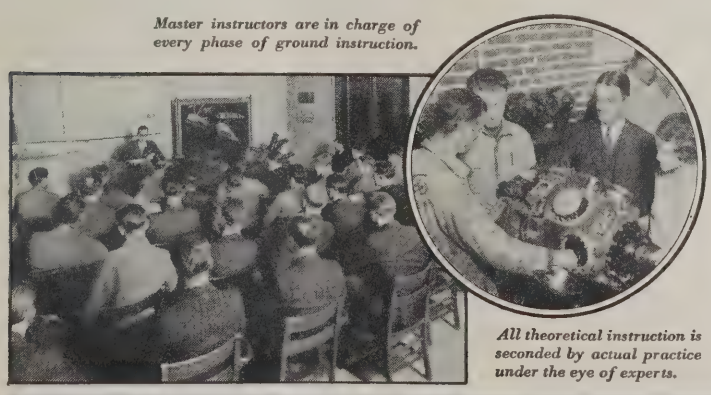

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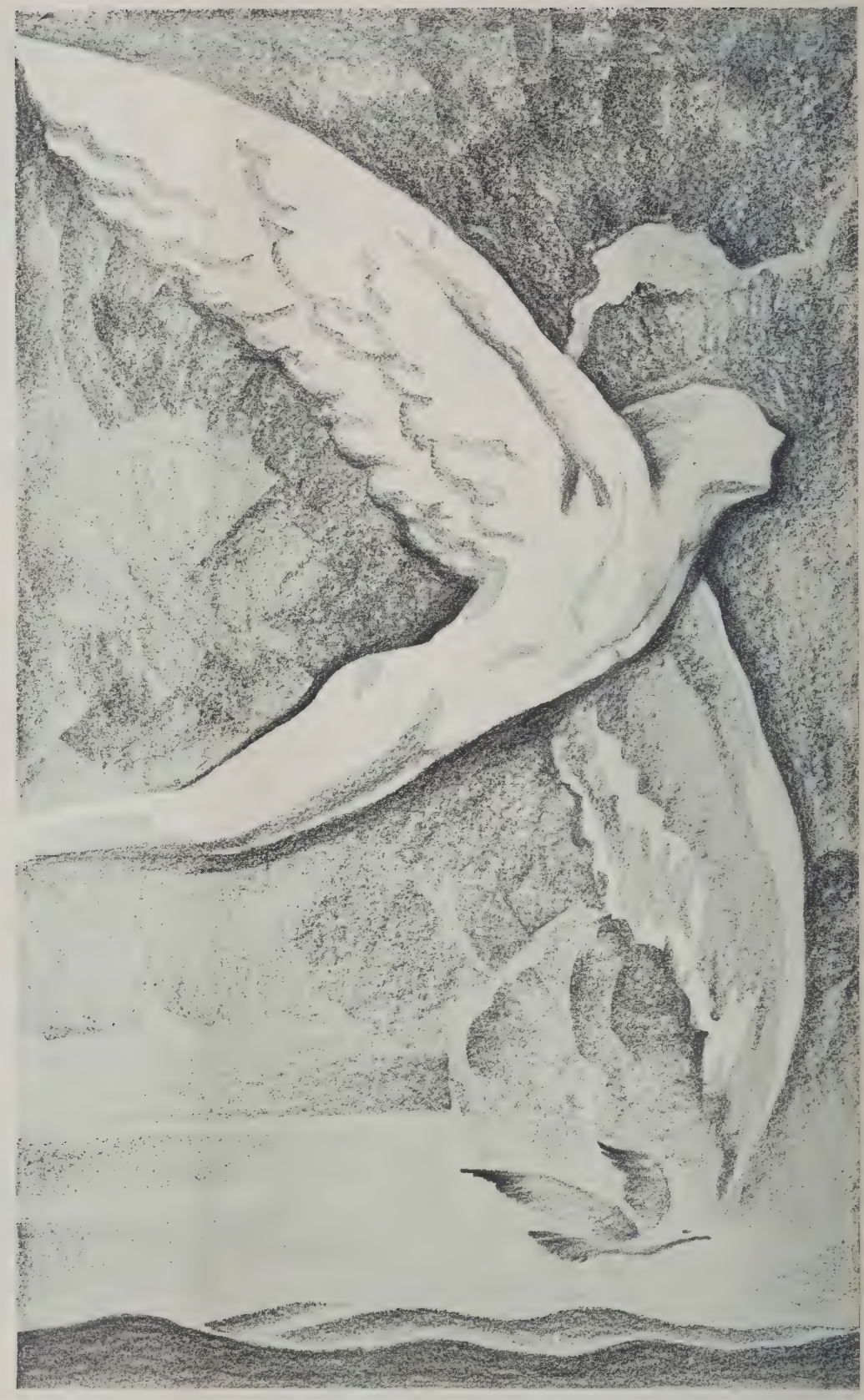
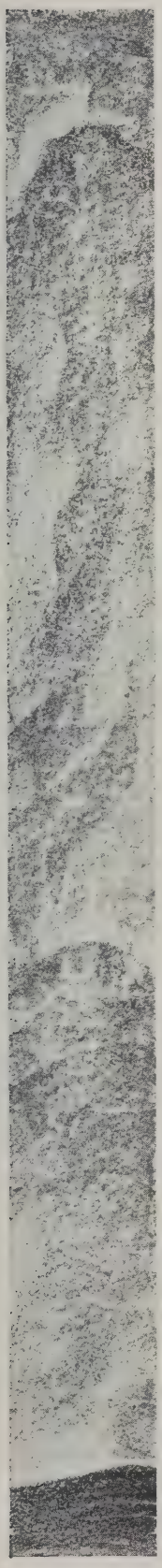


Again, with the aircraft Diesel, Packard proves its right to the title, "Master Motor Builders"—and logically. The experience, talent and resourcefulness which, with the perfection of the Packard-Diesel, has revolutionized aircraft power was developed through the years in the designing and building of fine automobile engines. Compared to the difficulties presented in solving *the* great engine problem of the century, the finest car motor of today is elementary. So what greater assurance of supreme excellence could be asked by the automobile buyer than the Packard crest? It distinguishes that car of slender, graceful beauty and luxurious comfort, powered with the famous eight-in-line motor which has contributed most to Packard engineering leadership.



The PACKARD-DIESEL AIRCRAFT ENGINE

To a world already rapidly turning "air-minded," Packard introduces a supremely important engineering achievement, destined to give a new and tremendous impetus to flight.

Packard, the designer and builder of more aircraft horsepower than any other manufacturer in America, now contributes to air transportation the far greater reliability, economy and safety of a radial *Diesel* Aircraft Engine.

THREE YEARS IN DEVELOPMENT

When the epochal flights of 1927 focused the attention of the world on the air-cooled engine and civilian aircraft began to exceed Army and Navy planes in hours and miles flown, motors of less power and lower cost were demanded by a vast new market.

Packard had foreseen this demand but did not care to add but another conventional gasoline engine to the long list of those available. Immediate profits held no lure. But the opportunity to make a truly noteworthy contribution to the science of flight was an attraction and a challenge to Packard engineering genius.

So, equipped with the finest of facilities, adequate resources, the best of materials and machinery and an engineering staff of unsurpassed ability and experience, Packard set out to accomplish "the impossible"—to adapt the *Diesel* principle to radial aircraft engines. The goal if achieved was worth the years and millions it would cost, for the engineering world had long known that the Diesel engine was the *ideal* aircraft power plant. But Packard, in 1927, was embarking upon a course strewn with the wreckage of others' failures. What the engineering talent of the world said could not be done, Packard confidently undertook. And Packard has succeeded brilliantly.

A PACKARD TRIUMPH

In the Packard-Diesel engine Packard has for all time eliminated the principal causes of motor failure. It can almost be said that, like the simple, old water-wheel which had to run as long as water flowed over it, the Packard-Diesel must run as long as fuel flows to its cylinders. For the Packard-Diesel has no carburetor, no magnetos, no spark plugs. It has but one instead of two or more valves per cylinder. Each cylinder has an individual fuel pump, making it an independent operating unit. The fuel is ordinary furnace oil fired spontaneously by the heat of the compressed air in each cylinder.

There are three major advantages. *Greater reliability* because of extreme simplicity of design. *Greater economy* because of lower fuel cost plus lower fuel consumption, the latter permitting greater pay loads with longer range of flight. *Greater safety* because the fire hazard is removed through the use of *fire-safe* fuel, and the absence of electrical ignition equipment.

These three advantages mark *the greatest advance in aircraft power* in the history of aviation! Designers and builders of aircraft have been quick to appreciate them—operators and pilots have shown enthusiastic interest. Already the Packard-Diesel engine is offered as optional equipment on the following planes—Ford Tri-Motor, Ryan, Stinson, Verville and Eastman Flying Yacht.

After exacting tests by the United States Army, the Department of Commerce has approved the Packard-Diesel (Certificate No. 43) with an official rating of 225 horsepower. With a weight of 510 pounds this means *but 2.26 pounds per horsepower*. Packard has written a new chapter in the annals of air transportation.

PACKARD

ASK THE MAN WHO OWNS ONE

AMERICAN EAGLE SCORES AGAIN!

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FOUR-PLACE CABIN
MONOPLANE **$599.00**

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3-Place Biplane	(Model 129)	Kinner 100 HP Motor	$3795
3-Place Biplane	(Model 251)	Kinner 190 HP Motor	$5495
3-Place Biplane	(Model 251)	Wright J-6 Five Motor	$5995
3-Place Biplane	(Model 101)	OX-5 engine	$2195

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Please send me full information concerning the complete American Eagle line.

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FAIRFAX AIRPORT KANSAS CITY, KANS.

June 15, 1930

SOUTHERN AVIATION

Vol. 1, No. 10

Published monthly in the interests of aviation and all aeronautical activities in the southern states

T. W. McALLISTER, *Editorial Director.*
B. H. VINCENT, NAT M. JOHNSON AND S. R. McGILLIS, *Editorial Staff*

Contents

Car Distributor Uses Airplanes 9
The Lexington Air Show 12
Aerial Adventures 15
Development of NYRBA Flying Service 16
Studying the Weather Map 19
Dedication of Randolph Field 21
Today They Fly to the Derby 23
Cross-Country Student Training 25
News of Southern Airports and Airways 27
New Airport Developments 32
Aeronautical Personalities 33
General News of the Aviation Industry 37
New Airplanes and Accessories 47

THE extent to which airplanes may eventually be used by organizations doing business over a wide territory is indicated by the first article in this issue, telling of the practical value of planes to a car distributor in the regular routine of sales and service work. This organization also acts as an airplane distributor; but it is the service of a plane in facilitating car sales and service work over an extensive territory which is regarded as of primary importance, rather than its own sales possibilities.

* * *

A DIVERSIFIED menu is offered the readers in this issue, in the illustrated story of the spectacular air maneuvers of naval airplanes off the Virginia Capes; the detailed story of the development of the New York, Rio and Buenos Aires Flying Service; a practical article on studying the weather map; the interesting story of aerial travel to the Kentucky Derby; and the details of a new plan of training student pilots. In addition, the most important news will be found properly departmentized.

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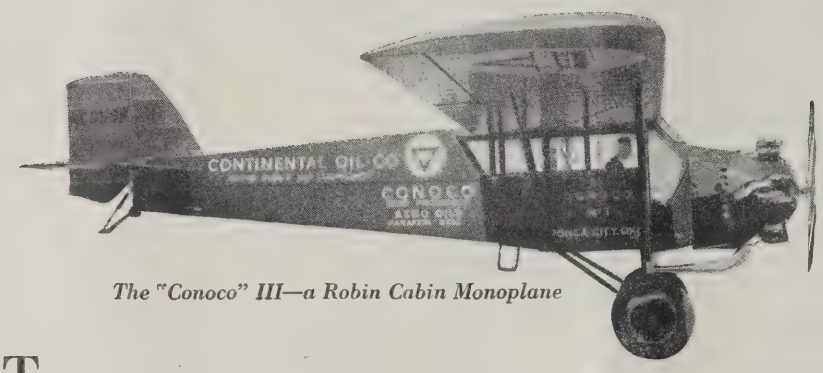
TRAVEL AIR AND ROBIN— PAY THEIR OWN WAY *for* "CONOCO"



The "Conoco" III—a Robin Cabin Monoplane

THE value of Curtiss-Wright planes to business and industry is well illustrated in the service of Continental Oil Company.

"Continental Oil has found that aviation pays its way. It is not a fad or fetish, but an essential adjunct to good business management. Time saved is money saved, and, as a result of airplane travel, Continental Oil Company saved some 15 days of executive time during one month. On several occasions, airplanes have been used to avoid delays that would have meant the loss of thousands of dollars in crude oil and gas, and might have resulted in heavy destruction of property."

Thus does Mr. D. J. Moran, president, describe the service rendered by the Conoco II, a 6-place Travel Air monoplane, and Conoco III, a 3-place Challenger Robin.

During a promotion campaign, the Travel Air carried four company executives on a 5,000-mile tour, making 12 stops for sales meetings. On this one tour, it was estimated that use of the Travel Air represented a saving of $2,000 over any other means of transportation.

The 3-place Robin is assigned to Mr. O. M. Bounds, aviation sales manager, "not as a passenger ship, but to use just as the jobber salesman or dealer salesman uses his automobile." Not only has the Robin proved itself indispensable in covering a large sales territory, but its smart appearance has a decidedly advantageous effect in making aviation sales.

The Conoco planes are constantly used when emergencies demand quick action. They have carried experts from Oklahoma to California to cap a "wild" gas well. A break in a cross-country pipe line, from which gas escaped at a rate of $4,000 daily, was discovered from the air in exactly 14 minutes flying time.

The Travel Air 6-place cabin monoplane, powered with the 300 h. p. Wright Whirlwind engine, has a high speed of 135 m. p. h., and a cruising range of 430 miles. It is a handsome ship, built for business, roomy, comfortable, dependable, economical.

The Robin 4-place cabin monoplane with 185 h. p. Challenger engine, sister ship of the endurance record holder, the "St. Louis" Robin, attains a high speed of 118 miles an hour and has a cruising range of 525 miles. Smart, swift, modern to the minute, the Robin is the last word in comfort, combined with economy of upkeep and operation.

Curtiss-Wright will gladly furnish complete details on the Robin and Travel Air cabin monoplanes, their adaptability to particular needs, and actual cost figures of operation and maintenance. Address Dept. T. R.-75.

Ray Shrader, Frank Moore, J. E. Moorhead, and B. E. Sibley, sales executives, starting out on a 5000-mile sales promotion tour in a Travel Air Cabin Monoplane (Conoco II)

Sales Division

CURTISS-WRIGHT CORPORATION

27 West 57th Street, New York

SOUTHERN AVIATION

Volume 1 June 15, 1930 Number 10

Car Distributor Uses Airplanes in Sales and Service Work

By B. H. Vincent

SINCE 1918 the airplane has been earning its keep in facilitating car sales and service work for a Mississippi automobile distributor.

Nearly twelve years ago, J. D. Sellers, Cadillac and La Salle distributor for the northern two-thirds of Mississippi with headquarters in Jackson, bought a left-over jenny. He did not list this war-time jenny as one of his business assets, but it proved to be the forerunner of a series of planes that have been bought and used from year to year by the Sellers Motor Company in their car sales and service work over this wide territory.

Mr. Sellers bought the jenny in 1918 at a price perhaps considerably lower than he could have gotten it five years later. He painted V-63, the model designation of the Cadillac at that time, on the tail surface where the Department of Commerce license number is now required to be shown, and the firm name on the fuselage. When a call for help would come in from a stranded motorist, he would jump in the jenny with a mechanic and hasten to the motorist's assistance, provided the aforesaid jenny was ready and willing.

Thus began the use of an airplane in the service of the Sellers Motor Company. Mr. Sellers found that the speedy service was appreciated by car owners and his firm is now known all over the northern and central portion of Mississippi for this feature of the business.

Left to right: Lieut. R. H. Ranney; J. D. Sellers, vice-president of Sellers Motor Co., and J. E. Howell, bookkeeper

Today a Cadillac or La Salle owner who has trouble in the district for which the Sellers Motor Company is distributor, would expect help from headquarters in Jackson in just the time it would take a plane to fly the distance. The territory covered by the Sellers Motor Company is approximately 250 miles long by 175 miles wide, and request for service from the farthest point of this territory is not unusual. Upon receipt of an emergency call the operation manager at the airport is phoned and by the time the service men reach the airport, the plane is ready to go. The service has provided valuable advertising for the Sellers company and has drawn many compliments from motorists living in and out of their territory. In addition to establishing a reputation for the service for the Sellers company, it has resulted in their recognition as the airplane authorities in north and central Mississippi.

To find just how useful the plane was regarded as a business asset by the Sellers company, J. D. Sellers, vice-president and general manager of the company, was asked if he could get along without his planes.

"We could, but we wouldn't like to," was his reply. "Our twelve years experience with many types of planes has proven to us that it is worth its keep and we will use them as long as we are in business."

When his dealer organization was broken up in 1917, due to flood and the failure of the cotton crop, the airplane

became more valuable than ever in the servicing and sales departments of the Sellers company. In place of dealers, Mr. Sellers himself now works the territory formerly cared for by his dealer organizations, flying to and from the various towns in his territory.

"When we circle a town in our territory several times before landing, every one sees our plane and our advertisement on the lower wing, and knows that we are available for any service that they may desire," he explained.

"When one of our cars breaks down within 100 miles of Jackson, we can be there in approximately one hour. In many instances we have had the owner on his way, when with any other type of service he would likely have had to wait over night for a repairman and consequently lose a day's time. We have done it many times and the owners have been more than glad to pay the extra cost of the call by plane.

"To arrive at a charge for our service by air we figure the railroad fare on 100 miles two ways, and a man's riding time, which averages 12 cents per mile."

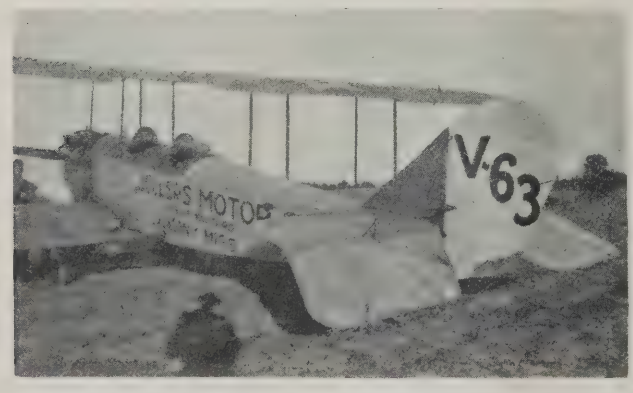
A few instances of how the Sellers organization has used the plane in rendering mechanical service to stranded motorists follows.

Long Distance Car Service

A lady with a party of four friends was driving to Jackson from Yazoo City, 35 miles away, to attend a party. She bought gas at Yazoo City and a short distance out her motor stopped. She called the Sellers company and in a short time the mechanics were there, found that she had gotten gas with water in it, and in an hour she was on her way with her friends to the party.

At Browns Wells, a health resort fifty miles from Jackson, a man started to town with his family. Something went wrong with his car and he phoned the Sellers company at 3:00 o'clock. The plane arrived there a few minutes after three, landed in a pasture about a half-mile from the car, and the mechanic and Mr. Sellers caught a ride to the disabled car. The repair job was completed in a short time and the customer made his trip to town that same day instead of waiting until the next day as he had planned to do when the trouble occurred.

At McCool, Miss., 100 miles from Jackson, a mechanic not accustomed to working on a Cadillac, got



The first plane used by the Sellers Motor Company in servicing their cars. Note the Cadillac model designation on the rudder

Officials of the Sellers Motor Company, Cadillac, La Salle and Eaglerock distributors in Mississippi

the motor out of time. A telephone to headquarters and the Seller's mechanic was on his way. When he arrived at McCool he found that the whole town had turned out to see him come in. The trip by plane required one hour, but it took a little longer than it ordinarily would have to time the motor, as the whole crowd insisted on seeing mechanic work. He finally roped the car off and in 15 minutes had it on its way.

The foregoing are just a few instances of the type of calls received and answered by the Sellers' flying mechanics.

Mr. Sellers says the advertising derived from these flights has sold a number of cars for him. "When we pass over the whole populace along our route looks up and sees our sign "Cadillac-La Salle" on the bottom of the lower wing. When we arrive at a town, we circle it several times and all of our customers know that we are in town and available for service if there is anything they wish done to their cars."

"Sales resistance, we find, is often lessened by calling on our prospects by plane. I dropped in to see a doctor in Vicksburg once who was thinking of buying an ambulance. When I got to his office his secretary called, telling him an aviator was in the office to see him. He gave me an interview and I got the order for the ambulance.

"We had a dealer in a country town who would not think of taking a ride with me. One day he brought his family up to Jackson and I took all of them for a ride over the city. They kidded him about being afraid to go up and he finally broke down and crawled into the cockpit. I carried him over town and upon landing he expressed delight with his ride. In a few days I received a call from him at his home telling me he had a prospect for a car and that he wanted me to bring the plane over to fly the prospect to Jackson for a look at the car. I brought them both over via air and the prospect bought a car from us that day."

In all of their flying around to service their cars, Mr. Sellers says they have never yet failed to find a landing field reasonably close to the stranded car. The Delta country in Mississippi affords many natural landing fields, but he points out that the plane has been used in all directions from Jackson within his territory and service has always been much speedier than would have been possible by any other means. What he is doing in servicing Cadillacs and

One of the Sellers Company's service planes on a call. These planes render service to stranded motorists over the greater portion of Mississippi.

La Salles in Mississippi he believes can be done in any other part of the country, and a little advertising will acquaint the public for miles around with the speedy service offered.

By the use of a plane, Mr. Sellers now works Laurel and Natchez, Miss., in one day, calling on prospective customers for cars. Both cities are approximately 100 miles from Jackson.

Over the territories stricken by floods in 1927, the plane proved its worth more than ever before to the Sellers organization. They now have few dealers in this district and personal calls are made by plane. Flood relief work was carried on with the company's plane in 1927, serum and food being delivered to many families that were surrounded by water, and good will towards the company was built up thereby.

Nearly every one in the Sellers organization is a pilot. Mr. Sellers has accumulated approximately 600 hours since he started fooling with the old wartime jennies in 1918. There was a time when an effort was made to teach every mechanic employed by the company to fly, but it was soon found that as soon as many of them learned they would leave the company and go off on a barnstorming tour.

Mr. Sellers has helped many youngsters to learn to fly, and in many instances has sold them planes on credit that they might build up their time and get into business for themselves in some of the smaller towns of the state as airport managers or in other aerial services.

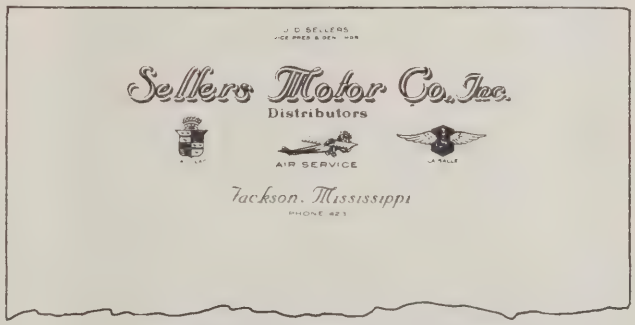
Pioneer Plane Distributor

Mr. Sellers became distributor for the Waco in 1923 and in 1927 took over the distributorship for Eaglerock planes. His company has not done a record business in airplane sales, but inquiries reveal that the market is improving. After the war a good many war surplus planes were sold and then came a lull until Lindbergh crossed the Atlantic, when the demand increased again. During the past year, several planes were sold and a number of recent inquiries from business concerns reveal the fact that they are thinking seriously of using planes in their business.

"The sales end of the industry lacks organization and a code of ethics," said Mr. Sellers. "We have had a lot of experience in selling cars and we know what we can promise a customer, but in the airplane sales end of our business we sometimes run into difficulties. Most of our purchasers of planes expect us to stand back of them just as we do in car sales.

"The distribution end of the airplane industry is going through the same period of evolution as the automobile did. There was a time when we sold a car, and then sold the purchaser a top and a horn and the various instruments required to complete the job. There are always a lot of extras to be figured in above the quoted price of the plane and they are plenty high. From the psychological standpoint it does not set well with the prospective customer."

Mr. Sellers believes that salesmanship is necessary in helping the manufacturers dispose of the planes accumulated during the past year, but that it is useless unless the airplane builders themselves wake up and extend the proper cooperation. In anticipation of taking on the distributorship for an additional line of planes, Mr. Sellers recently sent out letters to a half-dozen manufacturers indicating his willingness to handle their products. By the time this article appears in print, all of them may have swooped down from the skies to pay a personal call on him; but three weeks after the letters went out, Mr. Sellers said he had heard nothing from any of the manufacturers.



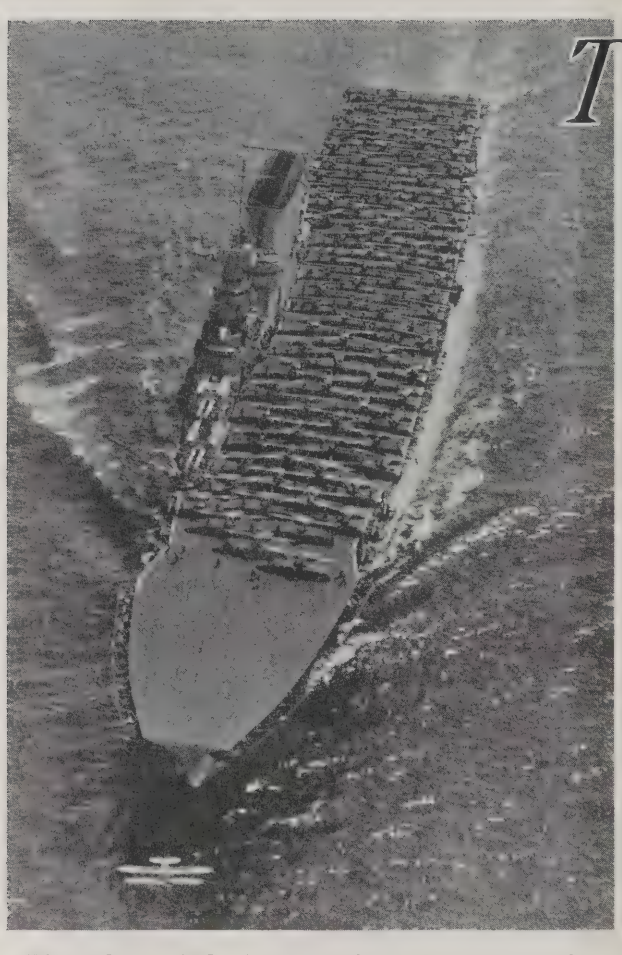
The company's letter head features aerial service

The light plane that can be maneuvered into and out of small fields constitutes nearly one hundred per cent of the sales and calls for planes that the Sellers company receives. Business men of the city take week-end trips to their plantations or go on hunting or fishing trips, for which the light sport plane is ideal. Mr. Sellers himself has built a landing field on his plantation and uses his plane to make week-end trips which would by other methods of travel afford little time for relaxation from business.

There have been several airports completed during the past year in Mississippi and others are under way. In consequence the Sellers company has had some recent queries for cabin jobs. Mr. Sellers believes that a few planes of this type will be bought in his territory before the year is out.

In every section there seems to be some one man who has sought to establish aviation locally. Mr. Sellers is the real father of aviation in central Missis-

(*Continued on page* 46)



First plane of the Lexington's brood of sixty-nine fighters taking the air during recent maneuvers

The Lexington Air Show

The Recent Spectacular Maneuvers of the Naval Airplane Fleet off the Virginia Capes

By W. E. Debnam

THE Southern Drill Grounds, the sector of rolling Atlantic off the Virginia Capes comprising the Navy's training ground in that area, was the scene of the most spectacular air maneuvers ever staged on the East Coast, on April 26, as the airplane carrier Lexington and her fighting brood staged mock warfare for the entertainment and edification of a distinguished party of congressmen and high army and navy officials.

The day was perfect for the "show." While man made mimic warfare, the elements—sea, wind and sky—combined to furnish a peaceful setting as the mighty carrier weighed anchor in Hampton Roads shortly after 7 o'clock in the morning and headed toward the Virginia Capes with the attending destroyers Humphreys and Dallas and the tender Aroostook coursing in her wake.

Viewed from the bridge of the Humphreys, the Lexington, her flight deck crowded with bright yellow planes, her guns gleaming in the morning sunlight, her great curved bow plowing a sparkling furrow in the sea and her propellers leaving a wide swath of flashing, churning water in her wake, presented a stirring spectacle.

It was shortly after 9 o'clock and the Cape Henry lighthouse was 15 miles behind when a watchful lookout on the Humphreys shouted the thrilling news to watchers upon bridge and deck: "They're warming up the planes!"

A few moments later one of the Lexington's searchlights became a heliograph to flash an order to the Humphreys to take her position 1,000 yards to the rear off the starboard side. A similar order sent the Dallas and the Aroostook swaying away to port.

Soon there swept downward to beat upon the ears of the watchers upon the Humphreys the full-throated roar of the Lexington's fighting brood, massed upon her flight deck awaiting the signal that was to send them soaring aloft.

The signal was not long in coming. The clock on the Humphrey's bridge marked the hour as 9:45 when a shout of "There she goes!" went up from the assembled watchers on the destroyer as a light combat plane, released from the anchoring chocks, raced along the Lexington's deck to leap gracefully into the air. The show was on.

At intervals of but a few seconds other planes, combat, bombing, torpedo—every type of flying engine of warfare that makes up the Lexington's complement—launched themselves aloft in the wake of the leader until, less than 10 minutes after the first plane had left the carrier, sixty-nine aircraft were soaring aloft.

"It reminds me of what happens when you punch a hornet's nest with a stick," remarked one of the watchers on the Humphreys.

Even as the planes soared upward, they began arranging themselves into squadrons, as they climbed out of sight of the watchers below. For several minutes the sky, to watchers on the Humphreys, appeared empty of airplanes and then the cry "Here they come!" caused every eye to focus in the direction the lookout pointed to discern, far away to windward, a group of tiny black spots, arranged in the familiar V-shaped formation of squadron in flight, bearing down upon the Lexington.

Roaring downwind at a height of approximately 1,000 feet, the Lexington's brood swept in review across the mother vessel, the roar of their engines assuming almost deafening proportions as they passed over the Humphreys.

Not all the planes were in battle formation, how-

ever. Far away on either side of the racing squadrons of combat, torpedo and bombing planes, lumbered four lazy Loening amphibians, wheels tucked in—"crash boats" of the sky standing by to render aid should something go amiss with any of their fighting comrades. As is usually the case, however, their services were not needed in this capacity. The formations passed out of sight down wind and the curtain fell on the first act.

It was rung up again a few minutes later when, more than a mile downwind from the Lexington, which had now reduced her speed to a scant eight knots an hour, there appeared a squadron of combat planes, racing diagonally across the bow of the Lexington at a height of about 200 feet with their exhaust tubes pouring out slender, trailing tendrils of a dense white smoke that, hanging in the air for a moment, slowly began to let down a screen that looked for all the world like a great white curtain, suspended high in the heavens, gradually rolling earthward. Ten minutes later this curtain, extending for two miles across the bow on either side of the Lexington and her convoy, blotted out all view of the sea beyond.

The curtain-dropping planes disappeared behind this screen and then, seeming to those on the Humphreys so intently engaged in watching the smoke screen to suddenly materialize out of nothingness, the sky about the Lexington was full of diving, swerving, darting combat planes, descending full-throttle in a matricidal machine-gun attack upon the Lexington while the decks of the mother ship, changing character with her brood, flashed flame and smoke from stem to stern as the Lexington's anti-aircraft guns sought to beat off the attack.

Hardly had the combat planes disappeared when, roaring upwind from over the top of the smoke screen, there descended upon the persecuted Lexington a swarm of giant bombing planes, lumbering along at a height of about 1,500 feet, intent on laying their "eggs" of destruction upon the deck they had quitted less than an hour before.

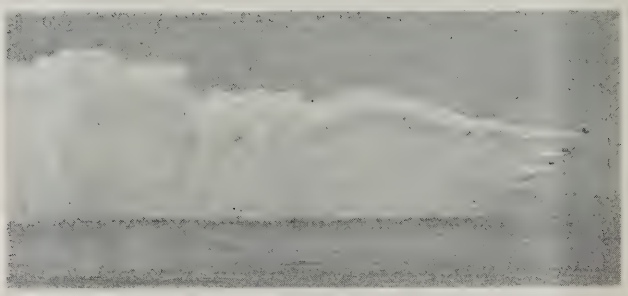
Threatened with this which, with the single possible exception of the submarine is the most destructive weapon the carrier has to fight, the Lexington turned loose with every gun she carried, the heavier boom of her eight-inch guns singing a deep bass to the tenor of the anti-aircraft rifles. Nor were the guns of the carrier alone in their attack upon the bombers. Even before the heavy planes had arrived over their target they were beset on every side by squadrons of combat planes diving full tilt to the attack.

The bombing attack ended just before the Lexington entered the outer edge of the smoke screen, still hanging heavily across the heavens. A short time later the Humphreys, too, was wrapped in that impenetrable mist.

"It's like a North Sea fog," remarked Lieut. Comdr. S. A. Manahan, commander of the Humphreys. The deep-throated fog horn of the Lexington sounded a single blast and then, as if by magic, the Humphreys was through the screen and out in the clear, bright sunshine again with the Lexington in her same relative position as before.

Such were the thrills for those aboard the Humphreys that led to the climax of the show when, with heavier bombing and torpedo

Above: A close-up of one of the Navy's combat planes taking off from the deck of the Lexington. Below: Planes ready to take off from the deck of the Lexington. The whole fleet can be launched in less than ten minutes.



A trio of planes from the Lexington laying a smoke screen during the maneuvers off the Virginia Capes

planes drawn off into the wings against the horizon, the stage above the carrier was given over again to the combat planes for the staging of such aerial combats and stunting as to bring cries of astonishment and admiration from the lips of the watchers at the skill and daring of the combat pilots.

The air was full of "dog fights" as pairs of planes, simulating combat in the air, rode each the other's tail, dived for incredible distances, did Immelman turns and barrel rolls and every other maneuver that human skill and daring can execute and these man-made birds obey to ring down the curtain on the aerial fighting show by the navy's airmen.

Then, maintaining her course straight into the teeth of the wind, the Lexington gradually built up her speed to approximately 25 knots before the motorized birds began to return to their floating aerie. Almost as speedily as they had departed, the planes began to land, drifting along behind the carrier with gradually closing throttle until they settled upon the deck to be stopped almost instantly by that mysterious landing device which Uncle Sam guards so jealously.

The landings were made without mishap with the single exception of one plane which, settling too suddenly upon the deck, cracked off one wing of the landing gear.

With the last plane safely back aboard, the Lexington and her convoy turned back toward Hampton Roads. The maneuvers, as mentioned before, began approximately 15 miles off the Virginia Capes. The Lexington was 50 miles at sea when the last plane had landed back aboard. The carrier cast anchor in Hampton Roads shortly after 4 o'clock. The show was over.

Among the distinguished party which viewed the maneuvers aboard the Lexington were Assistant Secretary of the Navy for Aeronautics Davis Ingalls, himself an American "ace" during the World War, and Senator Hiram Bingham, of Connecticut, a World War flier and president of the National Aeronautic Association.

Instructions for Marking Obstructions To Air Navigation

In an effort to minimize the hazard to flying that results from obstructions to air navigation such as radio towers, smokestacks, transmission lines and telephone poles in the vicinity of an airport, intermediate field or along a civil airway, the Aeronautics Branch of the Department of Commerce has prepared and issued a set of "Instructions for Marking Obstructions to Air Navigation," it was announced recently by Clarence M. Young, Assistant Secretary of Commerce for Aeronautics.

Structures such as radio towers, smokestacks, transmission lines, power lines and telephone poles which are so located with respect to the thoroughfares of air travel as to present hazards to air navigation should be marked for the protection of the flying public as well as the public on the ground. The Aeronautics Branch appeals to these private interests on whose property such obstructions might be located to provide them with day and night air markings.

One of the Lexington's three-purpose bombers taxiing into position after a landing

George Rumill, well-known Curtiss-Wright pilot stationed at Miami, Fla.

Aerial Adventures

By George Rumill

Curtiss-Wright Flying Service

STORIES about fires in the air should usually have a little moral to set them off, I suppose, like "Remove the fire hazard before the take-off," or "An extinguisher in time saves lives," but neither of these seems to fit in this instance.

If there must be a moral to the yarn, it should probably be, "pick your place to have your fire."

It was a cold, disagreeable morning in the winter of 1918 when we hopped off, an observer and I, in a Short patrol bomb-carrying plane from the Royal Naval Air Station at Killingsholme on the Humber River.

I was then with the U. S. Naval Air Forces, attached to the Royal Air Station to aid the English in ridding the North Sea of the dreaded U-boats. Our duties were to patrol the North Sea, keeping a sharp lookout for the stick-like periscopes or other evidences of the Kaiser's underwater craft and also to furnish aerial convoy to any commercial ships of the Allies that might wish to use the body of water.

On that day in 1918 when we hopped off, we were faced with the customary amount of north England fog, which leaves you to guess at where you are going, and on top of that enough rain to ruin the day for us.

We were headed out on patrol, which was, briefly put, long distance reconnaissance of the North Sea. It required from four to six hours flying on each "trick," and half of that time we were out of sight of shore and shipping. Our greatest hazard was from forced landings.

Our motors were never dependable at best, and the ships were even worse, if anything. To fit them for bomb dropping, certain struts had been removed from the pontoon bracing, and this, of course, took from their strength. They just weren't meant to stand the drubbing which the boisterous North Sea could give them.

And if we came down out there, it meant lots of trouble. Our chances were about even for landing in a mine field. We might be able to dodge the mines all right, but once we sat down, we were due to stay for a while, for no skipper who wanted to keep his ship afloat would risk her in a mine bed.

So the little matter of a possible forced landing was uppermost in our minds when we took off that morning and headed out for patrol. Under the fuselage swung two 320-pound bombs, their sleek sides hiding enough high powered explosive to scatter us over a considerable bit of landscape, but we didn't give them a thought.

As for myself, I had found out they weren't ticklish a few days before when one broke loose from its fastening on a plane and thumped down, right on its nose, on a concrete ramp. Nothing happened, but I did get a bad case of shivers in the vicinity of my backbone. If the thing had gone off, it would have been a "direct hit allright and the station or a goodly part of it would have been missing thereafter.

Our 310-horsepower Sunbeam motor was humming beautifully as we headed out to sea. Trouble seemed unlikely, but then is the time you can expect it most, of course. Just as I headed the plane across Spurn Point and set its nose out to sea, it hit us—hard. The motor backfired through the carburetor. An inlet valve had gone out.

Gasoline flooded in around the hot motor before I could close the throttle and soon, with the free gasoline and the grease about the engine, we had a nice blaze.

It got most uncomfortably hot in the cockpit as the flames licked up that steady stream of gasoline. The flames were under the hood, of course, and forward of the big bombs, so that the wind kept the fire blown free of the explosives.

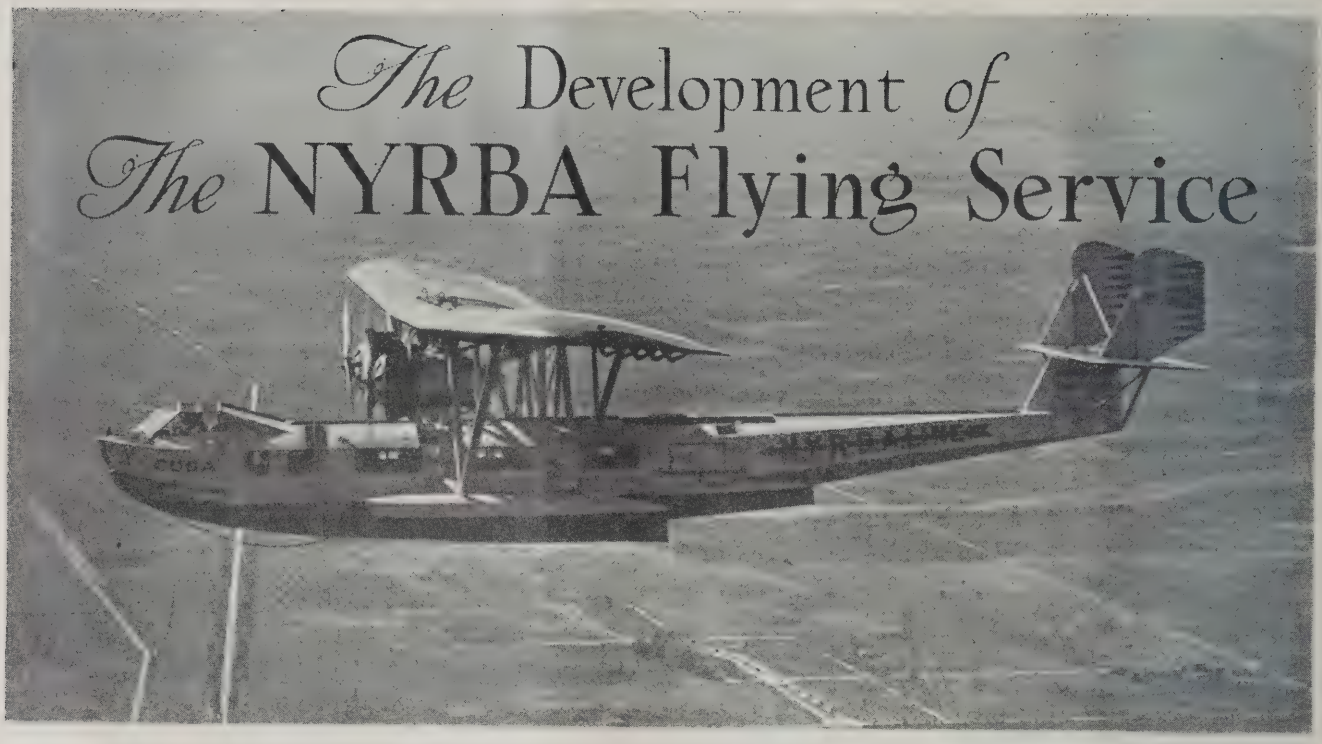
While I squinted over the side for a "soft spot," I sideslipped the ship to keep the flames from roasting us alive, and somehow I eased the plane down to where I could catch a glimpse of the river below us. When I got the smoke out of my eyes, I looked around and found everything all right. The plane was floating gently on the river, while to my surprise, not 200 yards away, a British battleship was riding an anchor.

Help, and so close I could touch it! Can you beat that for pure, unadulterated luck? Two hours more and I might have been praying for enough wood and canvas to hold together for us to survive another hour in hopes of a stray vessel sighting us.

Well, it was but a matter of minutes until the "limies" on the battleship had a boat over for our rescue. Lady Luck was sure with me strong that day, for while we were waiting around until we got orders from the station, we were the honor guests at the officers' mess, and if you don't believe that "a British officer and a gentleman" has a well-stocked larder, then you are mistaken. Believe it or not, they

(*Continued on page* 46)

The Development of The NYRBA Flying Service



One of the giant 22 passenger flying boats used by the NYRBA lines

By E. W. Sudlow

THROUGH service over a 10,000 mile airplane transport system linking together sixteen nations and colonies of the Americas has been inaugurated between Miami, Rio de Janeiro, Buenos Aires and Santiago by the Nyrba Air Lines. The word "Nyrba" is a combination of the initial letters of the words New York, Rio de Janeiro and Buenos Aires. The official name of the operating company is New York, Rio and Buenos Aires Line, Inc. Col. R. A. O'Neill of New York is president and general manager of the company. J. H. Rand, Jr., is chairman of the executive committee.

The first through trip was made on February 18th of this year and since that time a regular schedule has been maintained. At the present time 39 ports of call are reached on regular schedules. Under arrangements made with the two South American airlines the companies exchange passengers, express and certain classes of mail. These lines are the National Air Line of Chile, which operates 1700 miles of airways, and the LLoyd Boliviana, operating 1300 miles. The Nyrba Air Lines has direct access to every principal port and all but four countries of South America are on a direct line to the United States.

The schedules of the three sytems have been coordinated so that there is no loss of time for passengers or mail and a regular weekly service is in operation over the entire system. Starting at Santiago, Chile, on the southwest coast of South America, the trip to Miami is made in eight days. Buenos Aires is the stopping point for the first day's flight. The end of the second day finds the plane at Rio de Janeiro. Natal, pretty well up the east coast, is the stopping place for the third night out and everyone rests at Para the fourth night. The end of the fifth day finds the plane at Georgetown; San Juan is reached the sixth day, Cienfuegos the seventh and Miami the eighth day.

In addition to the ramps and hangars already built at the overnight terminals and main stopping ports, floating ramps or barges on which are supply stations have been installed at intervals along the route where the planes may stop for gas.

While it takes seven days to bring in mail from the farthest point reached by the Nyrba Air Lines and eight days to transport passengers to Miami, it means travelling anywhere from eighteen to twenty-two days to make the trip from the nearest port to New York by boat. One day is saved on airmail service because of night flying between Buenos Aires and Rio de Janiero by the mail plane. Passengers are not given this service at the present time.

Commercial good will tours to enable American business men to establish cordial relations with business interests in the large cities on the South American east coast will be a part of the summer program of operations, according to J. H. Rand, Jr., chairman of the executive committee of the New York, Rio and Buenos Aires Lines. Tours to bring representative business men of South America to the United States are also contemplated. The tours are being arranged with the idea of making Miami the gateway to the commerce of the east coast of South America, which comprises 80 per cent of the total South American trade. The opening up of a direct line operating on regular schedule which links this South American territory with the United States is doing much to promote commercial good

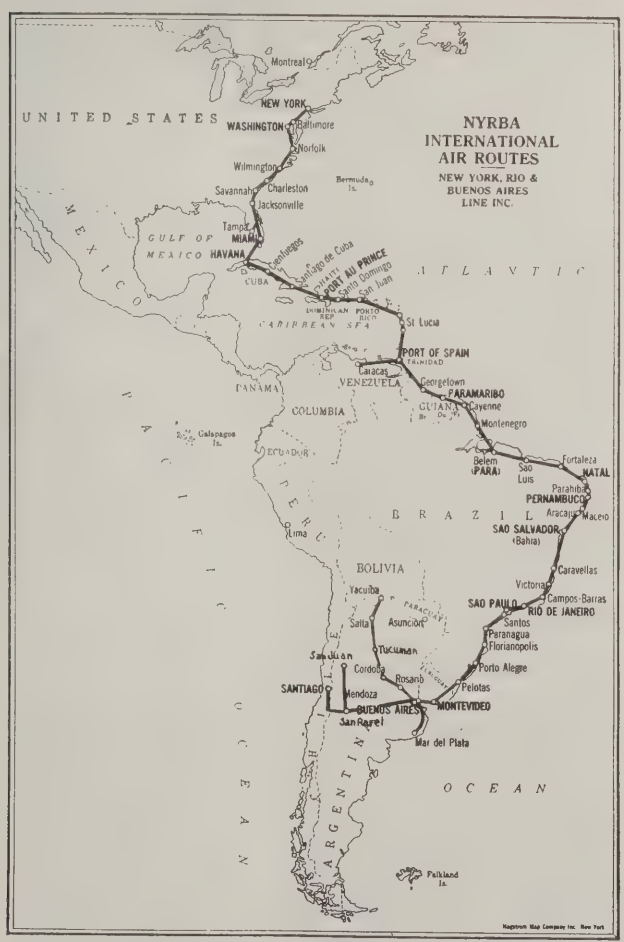
will between the several countries.

Already there is a steady increase in the amount of mail being transported via the Nyrba Lines. 1000 pounds was carried on the first trip. This has been increased weekly until now the amount averages 1700 pounds. Sending mail by air gives a saving of at least ten days on each piece. Business men along the east coast are beginning to realize the value of this, which is shown by the increased tonnage. Mr. Rand has figured that out of Argentina alone there is an estimated mail load to the United States of 18 tons a month. "All this first class mail," he said, "can be carried on the seaplanes of our line in five trips a month, since the airliners carry a load of four tons."

Arriving at Miami the mail is transferred to the post office and goes on its way via air mail. The New York, Rio and Buenos Aires lines do not have a contract at the present time for carrying mail via plane from Miami to New York. However, this is one of the things that it is hoped will be brought to pass before long.

When the company started its operations last August in South America its equipment consisted of three Fords and one Sikorsky plane. Since that time there have been added to the fleet of planes one Ford, eight Sikorskys, seven Commodores, three Fleets, two Fleetsters and two Lockheeds.

The Commodore seaplanes are said to be the largest flying equipment in use on any regular schedule in the world. These were built by the Consolidated



International route of the Nyrba lines

Interior view showing luxurious furnishings

Aircraft Corporation, and are a refinement of the navy type of hull which was used on the N. C. 4 on the first transatlantic flight. They were tested by the Navy for over a year previous to the first commercial attempt.

These giant flying boats have a wing span of 100 feet, an overall length of 62 feet, and stand 16 feet above the ground from keel to wing. Powered with twin Pratt & Whitney "Hornet" motors of 575 h.p. each, they have a high speed of 138 miles per hour, with an average cruising speed of 100 miles. They are so constructed that flight under full load conditions may be maintained on either one of the motors.

Originally designed to carry 32 passengers, the first Commodore commercial flying boat was rearranged to provide roomy accommodations for 22 in addition to cargo space for mail and express. Accommodations are extremely luxurious. Three light, airy cabins, larger than Pullman compartments, are offered. Full sized lounge chairs, comfortably upholstered, are restful and commodious. There is abundance of foot room about the chairs, and a six-foot-high ceiling over the aisle is a feature appreciated by every air traveler. Two of the cabins are furnished with eight chairs each; the third has but six chairs and in addition two six-foot day-bed couches for the comfort of any traveller. Special ventilators have been installed to keep the cabins cool and comfortable. Every ship has a well-equipped dressing room with running water and complete toilet facilities. Card tables are at hand for the use of any who may desire a writing space or for those who prefer to play a game while in the air. And a waiting steward is ever at hand to render any service.

Orders for fourteen of these Giant Commodores have been placed by the company, at a cost exceeding $100,000 each. Considerable improvements have been made since the first was built, and the latest models exceed anything ever before attempted in aircraft construction, it is said.

In addition to the South American service which it offers, the Nyrba Lines are operating between Miami and Havana, Cuba. Passengers are picked

One of the new Consolidated Fleetsters used by the NYRBA lines in transporting mail on its South American routes

up at Miami and Miami Beach hotels and brought in the company's automobiles to Dinner Key at Coconut Grove where the base is located. Trips are made once daily between Miami and Havana. The trip takes two and a quarter hours.

Every plane is equipped with a radio and operator. Never is it out of touch with at least two ground stations, which are situated on an average of 200 miles apart throughout the entire length of travel. Weather reports are received often enough so that the pilot knows exactly what is ahead of him. Every ten minutes a weather report is broadcast to the planes.

In addition to the steward and radio operator each plane carries a pilot and mechanic. Pilots are experienced men having a minimum of 2,000 hours air service. Great care is used in the selection of the men who pilot these giant seaplanes; only those of unusual ability are selected.

The type of people who are using the Nyrba Lines may be placed in three groups. Business men make up the largest number; tourists who are eager to visit the South American countries are the second group, and the third is people in South America who want to come to the United States. In this group are to be found the families of American business men who may be stationed in South American cities as representatives of great corporations. It is a long tedious trip to come "back home" via boat so the plane is welcomed as a means of transportation.

It is interesting to note that 40 per cent of the passengers are women. This is particularly true in the South American local travel. A business man now can take his wife along, because the trip will be made in a few days and will not take the several weeks required when boat and rail are used. Important trade centers often are weeks apart, and now three hours of flying will frequently replace a week of surface travel. As has been stated, there is a weekly schedule reaching every port on the route. In addition there is the more frequent service between intermediate points in South America which corresponds with the daily service between Miami and Havana.

Mr. Rand is quoted as saying that the company is highly gratified with the volume of passenger traffic which has developed since the opening of operations in Miami. This traffic is increasing every week. "We believe," he said, "it is due to the demand for greater safety in over-sea flying offered by large, ocean-going seaplanes which can safely fly at a very low altitude over the water, which is a continuous landing field." Reservations now must be made a week or two in advance of actual sailing date, so heavy is the traffic. The company confidently expects that within a year their schedule will call for seaplanes to leave Miami every day for South America, and from Buenos Aires for Miami.

When the line was opened last August the mileage for the first week was 5500 miles. During the month of March, eight months later, this had increased to approximately 35,000 miles per week. It is figures that are the final test in any business enterprise, and such an increase as this is quite gratifying.

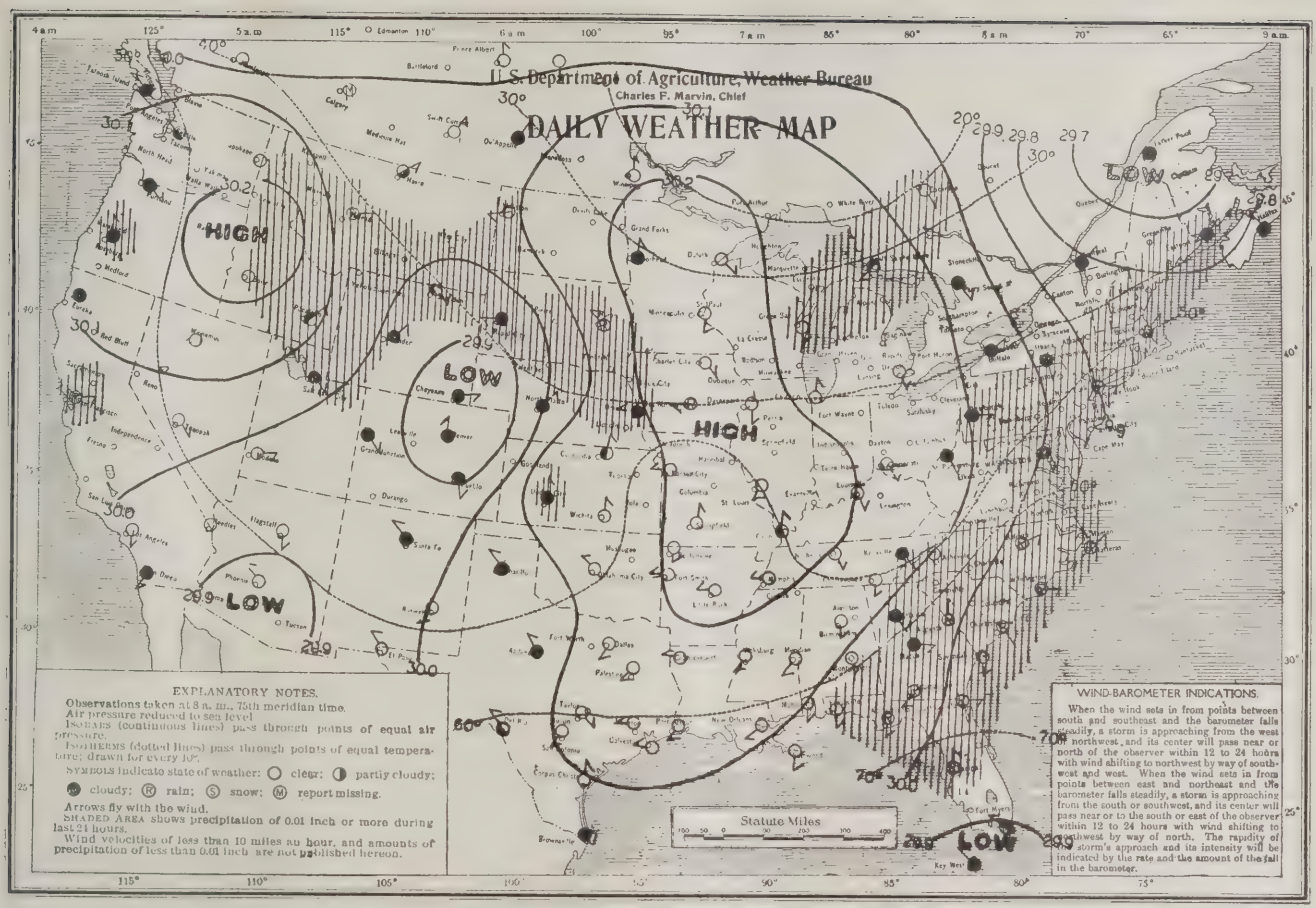
The business of the Nyrba Lines is conducted in regional divisions. The South Region comprises the territory below Para and is in charge of J. H. Edwards, regional manager. Headquarters of the South Region are at Rio de Janeiro. The administration of the North Region is located at Miami. The headquarters of the New York, Rio & Buenos Aires Line are in New York.

$800,000 Miami Investment

When the hangar and ramp is completed on Dinner Key the investment of the company in Miami will be in the neighborhood of $800,000. Dinner Key is the famous seaplane training base in the World War and is admirably located for the use of the Nyrba lines. This will be the maintenance base for the north division of the company and will be almost equal in scope to a manufacturing plant. It will be complete and modern in every respect and probably the largest maintenance base established thus far in the United States.

This service of the Nyrba lines is the culmination of several years pioneering work preparatory to through travel over a great trunk line reaching from Chile over the Andes to Buenos Aires, thence northward through Uruguay, Brazil, French, Dutch and British Guiana and Venezuela to the West Indies and over the Spanish Main to Florida. Plans now under way call for later extension northward to New York to provide fast direct service between the major industrial centers of both continents. Already it is possible for passengers either north or southbound to secure through air-rail service via Nyrba airliners and the Seaboard and its associated railroads. Reservations may be made through the offices of the company, or practically any railroad office or travel bureau.

When the inaugural trip over the newly charted route was made in February, it was Kenneth C. Hawkins, regional operations manager of the company, who served as pilot, guiding the ship over the 9000 miles of sea and land which separates Buenos Aires from Miami.


U. S. Department of Agriculture, Weather Bureau
Charles F. Marvin, Chief
DAILY WEATHER MAP
HIGH
LOW
HIGH
LOW
LOW
EXPLANATORY NOTES.
Observations taken at 8 a. m., 75th meridian time.
Air pressure reduced to sea level
ISOBARS (continuous lines) pass through points of equal air pressure.
ISOTHERMS (dotted lines) pass through points of equal temperature; drawn for every 10°.
SYMBOLS indicate state of weather: clear; partly cloudy; cloudy; (R) rain; (S) snow; (M) report missing.
Arrows fly with the wind.
SHADED AREA shows precipitation of 0.01 inch or more during last 24 hours.
Wind velocities of less than 10 miles an hour, and amounts of precipitation of less than 0.01 inch are not published hereon.
Statute Miles
WIND-BAROMETER INDICATIONS.
When the wind sets in from points between south and southeast and the barometer falls steadily, a storm is approaching from the west or northwest, and its center will pass near or north of the observer within 12 to 24 hours with wind shifting to northwest by way of southwest and west. When the wind sets in from points between east and northeast and the barometer falls steadily, a storm is approaching from the south or southwest, and its center will pass near or to the south or east of the observer within 12 to 24 hours with wind shifting to northwest by way of north. The rapidity of the storm's approach and its intensity will be indicated by the rate and the amount of the fall in the barometer.

Studying *the* Weather Map

By John A. Riley

Meteorologist in charge of Airways Weather Service at Candler Field, Atlanta

WHY are mail pilots almost without exception believers in and close students of the weather map? For answer, imagine yourself in the cockpit of one of these planes sailing through the night with a cargo of mail, the stars shining above, the twinkle of scattered lights below, and far ahead the rhythmic flashing of the ten-mile beacons along the course. Presently these lights grow dim and then disappear. Everything is darkness below and you know you are passing over a blanket of fog or low stratus clouds.

What to do? Shall the pilot turn back to the starting point or push on? Reports along the airway were favorable before the start and the plane is not equipped with radio to pick up later reports. The pilot must depend on his own judgment, and the latest weather map will probably be the basis for his decision.

In the early days of air mail little attention was paid to the weather, partly because the system of reports was inadequate, and partly because everyone was obsessed with the idea that mail must go through in spite of the most severe weather conditions.

One night in the fall of 1928 a pilot left Atlanta for Richmond while a hurricane was passing up the Atlantic coast. After flying for some time he found the clouds closing in on him and he had to pull up through them. A strong wind caught him and carried him westward where he crashed into the Blue Ridge mountains. The ship was a "washout" but the pilot miraculously escaped.

In February, 1929, when an Atlanta-Chicago pilot was caught in a severe snow storm in the mountains the ship went into a spin and dived to the ground. Fortunately the snow was deep in the valley where the ship landed; it nosed over in the snow, pinning the pilot underneath where he was almost suffocated by snow while gasoline trickled over him. After a time help came and he was extricated.

Nearly all mail pilots have had many thrilling combats with old man weather and these experiences have brought them to the point where the weather map is a guiding light unto their pathway. Every day these pilots may be seen consulting the map at Candler Field and many other airports.

The principal weather elements are atmospheric pressure, temperature, wind, and humidity in its vari-

ous manifestations such as clouds and precipitation. The weather map is intended to give not only a picture of the current distribution of these elements over the country but an indication of the changes that are probable within the next several hours.

The first thing that strikes one about the weather map is the large number of curved lines drawn about areas marked "High" and "Low." These lines represent the barometric pressure and are called isobars. The pressure is reduced to sea level, where the average value is about 30 inches. Isobars are drawn for each tenth of an inch difference in pressure.

Another set of lines on the map (broken) are drawn through places having the same temperature and are called isotherms. The shading on the map shows the area over which precipitation has fallen during the past 24 hours. Arrows fly with the wind and the weather at each place is shown as follows: Open circle for clear, shaded for cloudy, half shaded for partly cloudy; R indicates rain and S snow.

There are two ways of looking at the weather map: One is that these Highs and Lows are vast whirls in the atmosphere, carried along from west to east by the general circulation of the atmosphere. Another view is that there are converging air streams: Warm tropical air flowing northward and meeting a cold "polar front." This line zig-zags back and forth in middle latitudes, southward with the overflow of great mass of cold air from the far north and then retreating as warm southerly air gains the ascendancy.

In either case it is necessary to bear in mind certain physical laws that are applicable to the atmosphere in order to understand the processes of rain, cloud and fog formation. Cleveland Abbe, one of the founders of the weather bureau, many years ago announced, "The atmosphere and its phenomena are controlled by laws that are as simple and as inexorable as the laws of gravity, the law of inertia, the laws of reflection of light. Such simple laws as these, familiar to every one in his daily life, apply also to the atmosphere."

One of these laws is that the capacity of the atmosphere for water vapor is variable, depending on the temperature, the possible amount per unit space being much greater for high than for low temperatures; in fact, the moisture capacity is practically doubled for each 20-degree increase in temperature.

When the air is saturated the humidity is said to be 100 per cent, and the temperature and dew point are the same; the dew point, often found on airway reports, being simply the temperature at which saturation occurs. Should the temperature fall while the air is saturated some of the water vapor will be forced out as cloud or fog particles and if the process continues rain will result.

Ground fog is caused by cooling of the air near the ground by radiation; this condition occurs most frequently in the early morning. Temperature and dew point readings are then the same; but during the day the temperature rises and if no moisture is added the dew point remains the same, so that there is frequently found a difference of 10 to 20 degrees in the middle of the day.

A second law is that rising masses of air are cooled by expansion as regions of lower and lower pressure are reached; conversely, descending currents are heated as they reach levels of greater pressure; a familiar example is the bicycle pump which gets hot from the increased pressure inside.

Combining these two laws the cause of rain is apparent; to squeeze moisture out of the air all that is necessary is to lower the temperature sufficiently, and to bring about the fall in temperature nature most commonly forces the air to rise. Cumulus clouds, so common on summer afternoons, are built up by masses of warm air rising until the temperature falls to the dew point; if the process continues thunderstorms may develop.

Another type of rising air currents is found in the low pressure area; a study of the weather map reveals that the winds are blowing spirally inward toward the center of the Low in a counter-clockwise direction, so that southerly winds prevail on the east or front side of the Low and northerly winds in the rear.

This brings us to a third law: That cold air is heavier than warm air; therefore as the winds converge toward the center of the low the warm south winds rise as they meet the cooler east and northeast winds; in such a region widespread rains are likely to occur. The rain is occurring on the ground with a northeast wind but the moisture is being supplied from the south wind some thousands of feet aloft.

A ridge of high pressure acts in much the same manner as a mountain range when placed in the path of the warm moisture-bearing winds. The Appalachians furnish a good example of the influence of mountains; over some of the southern slopes of the Blue Ridge in Georgia and the Carolinas the rainfall increases from 50 or 55 inches over the lower slopes to 60 or even 80 inches on the higher slopes, while in the valleys the rainfall drops to less than 40 inches.

A condition favorable for low ceiling and visibility over the southeastern states is produced by a high pressure area over the middle Atlantic coast and a Low to the southwest, on the Gulf coast or in the lower Mississippi valley. This pressure distribution favors east and northeast winds from the Atlantic over the eastern slope and southerly winds blowing off the Gulf coast. Two causes are combined to produce bad flying conditions, namely, converging winds and increasing elevation toward the Appalachian mountains. The air as it leaves these water surfaces has a high humidity, and with falling temperatures caused by the forced ascent not only of converging winds but increasing land elevation, a widespread sheet of stratus clouds is formed; there may be four or five distinct strata with light misting rain falling. During winter such conditions occasionally persist for several days, with flying at a standstill.

On the other hand many storm centers cross the United States along the northern border without affecting the South. Usually only those storm centers that move far to the south across the Plains states or approach from the southwest seriously affect the weather of this region.

Air Corps Photo of Building Area

The Dedication *of* Randolph Field *June 21-22*

CLIMAXING two years of preparation, and bringing into reality the war time dreams of Air Corps leaders for an air center that in dignity and importance would rank with the famous schools of other branches of the service, Randolph Field, the world's largest airdrome, and often referred to as the "West Point of the Air," will be dedicated with an elaborate two-day program June 21 and 22.

High government officials, representatives of foreign governments and aviation leaders from throughout the land have been invited to San Antonio to participate in the dedication of the field.

The word "field" when applied to this huge project might be a misnomer. Were it not that this is a proper word for an air corps station, it might well be called "Randolph City." In reality it will be a city especially designed and whose every inhabitant is concerned with the art of flying and the necessary activities connected therewith.

It is located sixteen miles northeast of the Alamo City on an area covering 2300 acres, donated by the citizens of San Antonio, and lies on the main transcontinental line of the Southern Pacific Railroad and the Old Spanish Trail.

This flying city, at which in the future Uncle Sam's embryo officers, and some from foreign countries, will receive their training preparatory to being commissioned officers in the air corps, has been under way since January 1928, when the Secretary of War accepted the site which had been chosen by air corps officials and leading citizens of San Antonio.

It was designed by officers of the army air corps, and revised by George B. Ford, of New York, the War Department's consulting architect on city planning. It is unique in plan, especially designed to care for the many considerations making up the purpose for which it will be used; namely, flying training. It is believed to be the first development ever planned, having as a primary consideration its appearance from the air.

The area set aside for building alone comprises 450 acres, in the shape of a square. This square is located approximately in the center of the 2300-acre tract with only one entrance road leading into the building area. The railroad track enters from the highway on the northwest boundary of the field. The building area is thus surrounded by four separate airdromes, each approximately 3000 feet wide by two miles long. The entrance road and railroad are laid flush with the ground, so that an airplane can roll over them without damage in case of a forced landing in that area.

The entire post is designed in the Spanish Mission style of architecture, so prevalent in the Southwest, and with its stuccoed walls and red tile roofs, combined with palm trees, Spanish dagger plants and other shrubbery, will present an imposing sight when finished.

The main axis of the field lies southeast-northwest. The hangar lines thus parallel the prevailing winds. By using only two of the four fields simultaneously, and shifting to the other two when cross-winds prevail, it will be possible to prevent all flying over the building area. With the help of a paved warm-

ing-up apron 150 feet wide and a good crop of Bermuda grass, the dust situation will be alleviated.

From the air with its network of roads, the building area will appear as a huge spider webb. The main traffic boulevard enters the building area at the center of its northwest boundry and divides to form a large circle of 2500 feet diameter around the center of the post. Within this circle are the married officers' quarters, with the officers' mess in the exact center. There is a small circle at the entrance, around which are grouped various buildings forming a community center—the administration building, or headquarters, the post exchange, theater center, and chapel. In the northwest corner of the building area lies the industrial area—the garage, warehouse, engineering shops, bakery, laundry, etc. In the northeast corner, opposite, is the bachelor officers' area, consisting of four dormitory buildings grouped about a central mess. The southwest corner is devoted to the hospital, flight surgeon's school, nurses' quarters, and non-commissioned quarters; while in the southeast corner are the public schools for children, with a large playground, and more non-commissioned officers' quarters. There is a barrack area located just back of the operations office in the center of each hangar line. At the center of the southeast boundary are located the academic building, or ground school, and the cadet barracks.

The advantages claimed for the particular design of Randolph Field are many. It is the only arrangement that will provide a flying line of sufficient length to accommodate the required number of airplanes; it provides a clear field irrespective of wind direction; it will be possible to get airplanes from hangars, off the field, and vice versa in the safest, most expeditious and most efficient manner possible; taxiing of airplanes will be reduced to a minimum; maintenance, operation and school activities are most concentrated, tending towards economy of effort and transportation; it provides better ventilation for all buildings.

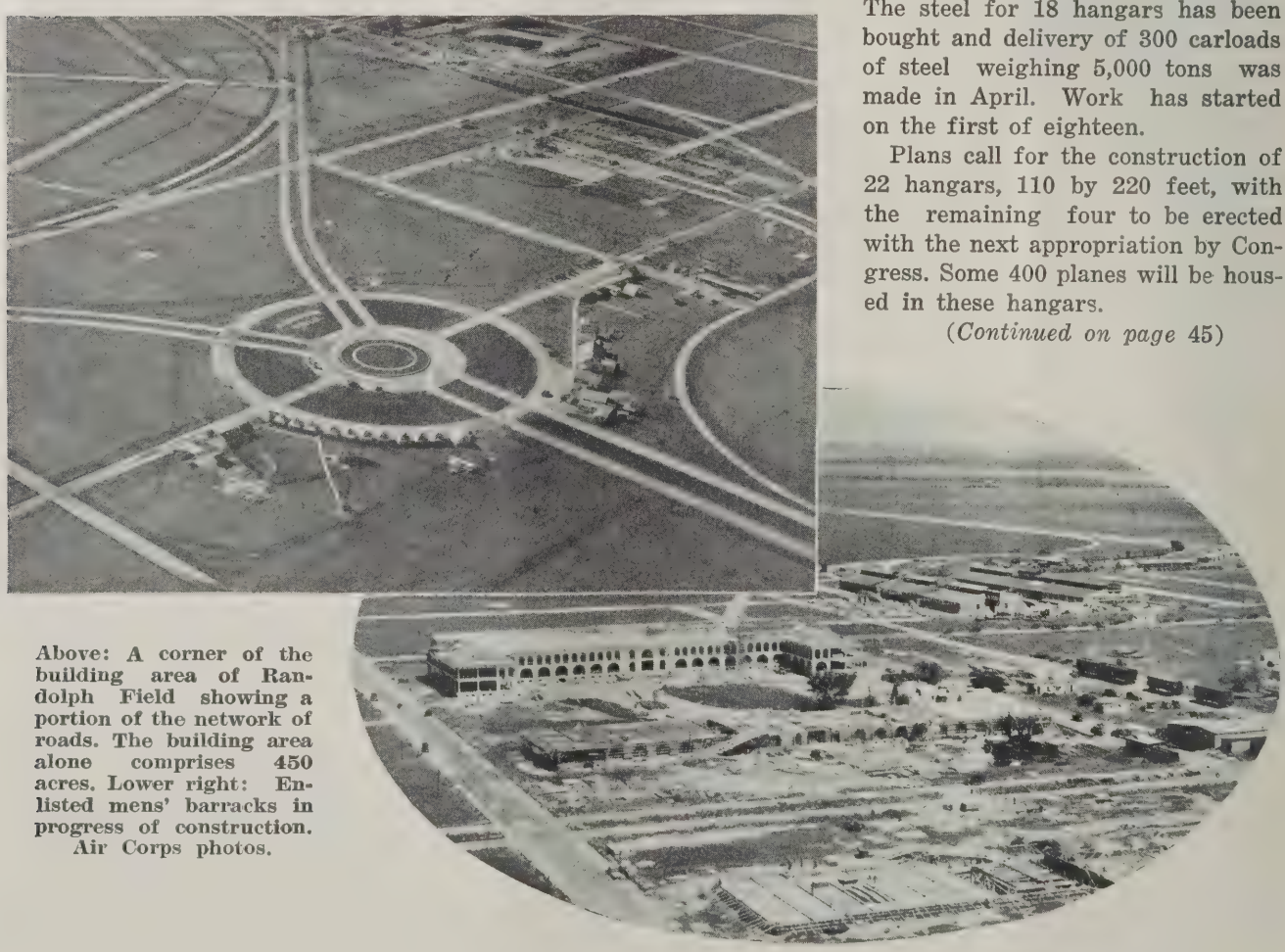
The large quartermaster warehouse and the air corps warehouse will have been completed, on dedication day, and the six officers' barracks now going up will be near completion. All the roads have been laid out and gravelled and the visitors will be invited to inspect the 18 miles of streets that are marked off in spider web effect.

When the dedication takes place several million dollars will have been expended on the construction of the field, including the sum of over $500,000 as the cost of the 2,300-acre field which was presented to the government for one dollar by the city of San Antonio.

Actual construction at the field has been under way since October, 1929 when contract for the first hangar was awarded to Murch Brothers Construction Company of St. Louis, Mo., who agreed to build the new warehouse and six barracks for $1,277,000. The steel for 18 hangars has been bought and delivery of 300 carloads of steel weighing 5,000 tons was made in April. Work has started on the first of eighteen.

Plans call for the construction of 22 hangars, 110 by 220 feet, with the remaining four to be erected with the next appropriation by Congress. Some 400 planes will be housed in these hangars.

(*Continued on page* 45)



Above: A corner of the building area of Randolph Field showing a portion of the network of roads. The building area alone comprises 450 acres. Lower right: Enlisted mens' barracks in progress of construction. Air Corps photos.

A corner of Bowman Field, Louisville, Ky., on Derby day

Today They FLY to the Derby

By A. W. Williams

TWENTY years ago the crowd at the Kentucky Derby marveled at the fortitude of the sportsman who had the nerve to travel several hundred miles in a chugging gas buggy to the racing classic. Twenty years ago is not so far back in this fast-moving age, but there were then but few more automobiles parked around the entrance gates of Churchill Downs, at Louisville, than there were planes at Bowman Field for the event last month.

Travel by air to the derby this year increased approximately 30 per cent over that of last year. A total of 72 planes brought spectators to Louisville this year for the race.

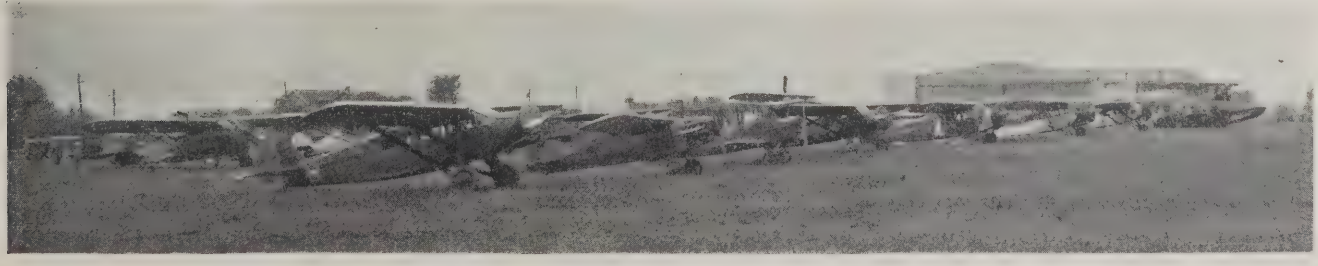
The sportsman attending the derby today from far distances gets in his plane on the morning of Derby Day and lands at Bowman Field in time to catch a taxi to the Downs, arrives there in plenty of time for a leisurely luncheon in the club house, takes in the derby, the fifth race on the card; gets away before the jam starts homeward, crawls into his cockpit, and with several hours of daylight still ahead of him, eats dinner in some city far away from the maddening, jostling throng of turf followers.

Contrast with the peace and tranquility of the air traveler, the case of the visitor who comes several hundred miles by road or train, who puts out a lot of the good old coin of the realm for transportation, food, and hotel accommodations en route, and who upon reaching Louisville finds that the hotels quit accepting reservations in January.

He perhaps sleeps on a cot in a hotel corridor or sample room, or perhaps even on a billiard table, or else takes very uncertain accommodations in some boarding or rooming house where he is lucky if he isn't rolled for all his ready cash and belongings. He stands in line for food at a class of restaurants that he ordinarily wouldn't think of entering.

The derby enthusiast who after totaling up the time lost, the expense of traveling, including transportation, lodging, food and what-not, plus the many inconveniences he has encountered, will find that he was a loser for not making a clean, comfortable trip by plane, under the least inconvenience possible, and probably at no greater expense, all things considered.

Air travel to the derby is not as great at present as it would be if Louisville were located on a regular air



Some of the planes that brought visitors to Louisville for the Kentucky Derby

transport line with scheduled departures and arrivals. Planes that came in for the 1930 race were either private craft or were chartered by individuals especially for the derby.

Including the 14 army planes, there was a total of 72 visiting ships for the derby. Seven more civilian ships and ten more army ships came to Louisville this year than came for the previous year's classic. Two hundred and fifty persons is a conservative estimate of the number who came to the derby by air. Many planes were owned by wealthy sportsmen who had chosen the air route to the derby before.

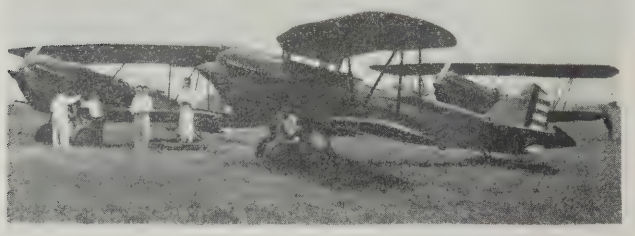
The Sikorsky amphibian, "Country Boy," of James C. Willson, prominent aero financier, brought a party to the Derby

Flying conditions for several days preceding the derby were not of the best, and no doubt kept many from attempting to fly to Louisville for the event.

One Louisville newspaper in commenting upon the aerial activity at the field said: "The registry at the field read like a Who's Who in American industry and the field and hangars resembled a 1930 aircraft show. Presidents and vice-presidents, secretaries, and lesser lights were included in the group of captains of industry who arrived during the day."

The Kentucky Derby is perhaps the greatest single sporting event in America and the oldest of all racing events. It was first run in 1875 and travel to the classic event has undergone an evolution from the horse-drawn cart to the present luxurious cabin passenger plane. Bowman Field with the great variety of planes parked there during the race presented a modern miracle in travel to derby visitors.

Practically every type of craft in service could be found in the assembled group of ships. Over there a



A few of the army planes that dropped in at Bowman Field on Derby day

little bi-plane with a small four-in-line motor, and over here a great trimotored monoplane. Here a bright red, there a rich green, again snowy white, intermingled with browns, yellows, greys, silvers, etc. Here an old and dirty bus, which looks as if it might be near the end of the life span, but it is the property of a chap who thinks a lot of his old crate. On the other end of the line we find the fancy, dolled-up ship of the millionaire sportsman.

The planes were a show apart from the derby to a great many air-minded folks, including pilots, mechanics, field men and neighborhood boys. To many of them this was a far better show than the event which attracted the ships to Louisville.

Hangar room at Bowman Field was not available for all the ships and they had to be staked down on the line. Ten days before the derby was to be run, it was announced by operators of Bowman Field that planes would have to be staked down, as it would not be safe to have the field cluttered with ships in case a blow came up during the races.

A service charge of $2.00 was made for Derby Day at the field this year which covered tying down planes where no one was left in charge of them. There is another field near Louisville but all the derby visitors checked in at Bowman Field.

Immediately after the running of the race, fourteen planes took off with films for all sections of the country, carrying account of Gallant Fox's victory.

Visitors to Louisville during the derby were high in their praise of Bowman Field and the manner in which their planes were cared for while there.

Variety of Planes

Included in the 58 commercial planes that were flown to the derby, were: 10 Stinsons, 8 Travel Airs, 6 Ryans, 5 Robins, 4 Fairchilds, 3 Ford tri-motors, 3 Sikorskys, 3 Cessnas, 3 Wacos, 2 Lockheeds, 2 Bellancas, 2 Aristocrats, 2 Lairds, 2 Command-aires, 1 Stearman, 1 Eagle Rock and 1 Flamingo.

Among the visitors who attended the derby by air were James C. Willson, well known broker of Louisville and New York, and prominent in aero financing and production. He flew to Louisville in his Sikorsky cabin plane, "Country Boy," with a party of six. T. F. Ryan, III, and Mrs. Ryan stopped off for the derby en route from El Paso, Texas, to New York in a Cessna. The Curtis Publishing Company of Philadelphia sent its Ford tri-motor down from Chicago with a large number of guests. The Bomar, a Sikorsky owned by B. G. Dahlberg, of Detroit, president of the Celotex Company, brought in several visitors. Lieutenant Casey Lambert of St. Louis, flew to Louisville for the racing classic in a Lockheed Sirius. The Standard Oil Company of Indiana sent its Ford plane from Chicago, and the Firestone Tire and Rubber Company of Akron, Ohio, sent also a tri-motor Ford. Larry Harris, pilot for Interstate Air Lines at Murfreesboro, Tenn., brought a party in a Fairchild cabin plane. Martin Johnson, noted African game hunter and photographer, flew in from Chicago; and John H. Candler, of Atlanta, came along in a Waco, from Troy, Ohio.

Fourteen military planes brought army visitors from the various air corps fields surrounding Louisville.

Bennett Griffin, Curtiss-Wright Flying Service instructor at Oklahoma City

Cross-Country Student Training

By Bennett Griffin

THE constant possibility of a revision in the method of teaching embryo students how to fly an airplane and the everlasting search for improvements in the present-day system has centered much attention on the scheme recently tested over Oklahoma and Texas for the Curtiss-Wright schools.

In making this test four students from the Oklahoma City school made the first known major cross-country flight with only advanced student pilots in charge of their respective ships.

The test was to determine the benefits of a long cross-country flight to the student and get concrete information on the possibility of finding a more rapid and efficient method of teaching flying.

The question, "is it possible to make a competent flier, ready to meet the emergencies a transport pilot must face, out of an advanced student in a short time?" is well answered by the log of this trip.

It was my pleasure to have charge of this test with B. S. Graham, Curtiss-Wright vice-president for Oklahoma, outlining the procedure before the take-off. I say it was my pleasure not as a banquet speaker uses that expression, but because I mean it. Without a doubt I got more kick out of the whole thing than any student on the trip. It was a joy. The students were a joy and their actions a most pleasing surprise.

To answer the many questions that will come up in the minds of students, prospective students and instructors, I am giving my report observations from both the students' standpoint and the school operation. Before going into this, however, it might be well to point out that this trip is another of the many indices to the rapid progress aviation has made.

The trip covered approximately 2500 miles of country none of us had ever seen before. About two years ago veteran pilots would have regarded that far across-country as a big undertaking, and many of my friends who can let their minds go back that two years, through old hands at the game, say they would not have attempted it.

Yet these students took it as a matter of course. There never was a question about the success of the flight in their minds, nor, of equal importance, in the minds of their friends who know nothing of flying.

For the rest we used Curtiss-Wright equipment throughout, OX Robin, Moth and Fledgling. That equipment proved worthy of our trust in every way.

Snow had covered the ground around Oklahoma City for weeks. Operations at both the municipal airport and the Curtiss-Wright Flying Field had been completely suspended. There was 14 inches of snow on the ground when our ships were wheeled out and made ready for the start. The take-off was a little hard because of drifts across the field, despite the fact that the runway had been opened with snow plows.

With snow every place the students ran up against a problem almost as soon as their landing wheels stopped spinning. We found snow over everything from Oklahoma City to Dallas. Snow makes land marks hard to distinguish, known objects fade from view and a village with which one may be familiar in fair weather is a strange land during snow time.

That one thing made this part of the trip most beneficial to the student, as he had to fly by compass alone. A map was of little value to him except to make out landmarks such as rivers and lakes and towns. It was possible for the youthful fliers to pick up a new compass setting at intervals, but they had to prove they knew drifts, and lots of other things that can be obtained only from books mixed with practical experience, to find Love Field.

B. S. Graham, Oklahoma vice-president for Curtis-Wright

Just before we reached Dallas it began to rain and get foggy, presenting yet another problem on the first leg of the journey. Each one proved himself capable of landing his ship in the gloom, however, although often not another member of the party was to be sighted.

We left Dallas in the afternoon, clocking San Antonio in three hours

and 10 minutes. After the take-off the students once more had to fly by compass over snow-covered land. At Waco the snow was gone, however, and maps came out.

I found the students had no trouble knowing exactly where we were at all times. They were able to figure their speed correctly and fix the hour of our arrival in San Antonio within a few minutes. The weather was glorious at San Antonio and we traded our Arctic flying clothes for a couple of overhanging shade trees. Guess I should put (paid advt.) after that.

We spent two days in the home of the Alamo, visiting the other airports and giving students pointers from army flights. Corpus Christi was our next destination. It took us only one hour and 50 minutes to make the hop.

About 25 miles out of Corpus each student again had to make a decision. A heavy fog was blowing in their faces, nothing but ankle deep mud

Students in the cross-country test flight. Left to right—Ed Quail, Mohler Miller, Bennett Griffin, I. C. Griffin and Ted Colbert.

could be seen underneath. Each pilot dropped his ship down to about 100-foot elevation and came on in.

Their nerves got a shock that tested their steadiness for landings just before they had to come down on the white shell port. Bunched, we prepared to settle in when out of nowhere and evidently headed for the same place came a flock of army ships with open guns.

The way our ships scattered reminded me of the ducks I used to see when they were shot into, but each man sat at least two and one-half points down without trouble.

En route to Brownsville we swung by Alice. Despite snow, fog and rain which we had already encountered I consider the trip from Alice to Brownsville the hardest test the students went up against, although we had beautiful flying weather. After leaving Alice we flew for 45 minutes without seeing towns, railroad or anything but mesquite bushes, or trees, I believe the natives call them. From above they look like almost a solid network of branches and if you had a forced landing—well, it would just be too bad.

Darkness settled in long before we reached Brownsville, but the students can't claim much credit for finding the port in the night, for one could spot it ten miles away. But veteran pilots know this was good experience for them, as after all they were doing night flying with a night landing ahead, a new experience for all of them. In many ways it goes to show that a well-trained student, given a new hazard, as a matter of course will know what to do and do it.

I had planned to stay in Brownsville for about a week and give regular school instruction to the men, but as no student instruction was permitted from the field there we returned to Corpus.

After a week we made a single jump to Fort Worth, spending five hours and twenty minutes in the air, the longest leg of the entire journey. The trip from Fort Worth to Oklahoma City the next day day took two hours and 15 minutes, completing our 2500-mile jaunt.

In figuring if the trip will be invaluable to each member in later days we must remember that each was forced to fly in every kind of weather from bitter cold to sweltering hot and land and take off from everything from improved airports to snow and sand fields.

The total gas and oil consumption for the three ships was 630 gallons of gasoline and 14 gallons of oil, which cost $177.10. Other expenses of the ships and party such as hangar storage, taxi fare and living expenses for myself raised this figure $349.25. Students' expenses for the entire trip were about $75 each, the way we took lift. However, I believe they could have gotten by with $50 without much trouble.

In exchange for their expenditure the students got this most valuable experience, a novel rest from their respective occupations and 25 hours of flying credit. To the firm we marked up having given these students 25 hours of training when everyone else was sitting on the ground, use of equipment that otherwise would have been idle, and a contribution to aviation.

It is also interesting to note that all of the boys "made the grade" when they were given their tests for Department of Commerce licenses.

Aeronautics Department Installed at Riverside Military Academy

Announcement of the installation of an aeronautics department at the Riverside Military Academy, Gainesville, Ga., was made recently by Joe Duckworth manager of the Atlanta base of the Curtiss-Wright Flying Service.

Equipment that will meet the Department of Commerce requirements for a limited commercial ground school course will be installed. This equipment includes two radial motors, one water-cooled motor, one complete airplane and the necessary spare parts. Instruction will begin at the opening of the 1930-1931 session in September. Flight instruction will be given at Candler Field during the summer months to the cadets who desire it.

The Gainesville school is the first accredited preparatory school in the South, according to Mr. Duckworth, to install an aeronautics department.

News of the Southern AIRPORTS AND AIRWAYS

St. Louis to New Orleans Service Starts

DAILY passenger service between St. Louis, Memphis, Jackson, Mississippi, and New Orleans was started April 27 by the Robertson Airplane Service Company, of St. Louis.

The service was started with single-engined Ryan broughams, which will be replaced by either twin-engined or tri-motored equipment as soon as it can be obtained. Departure from St. Louis is at 11:00 a. m. with arrival at Memphis at 1:35 p. m.; Jackson 3:50 p. m.; and New Orleans 5:45 o'clock. Northbound planes leave New Orleans at 9:40 a. m., reaching St. Louis at 4:00 p. m.

The fare between St. Louis and New Orleans is $45.00, St. Louis to Jackson $32.50, and Memphis to New Orleans $25.00. The distance is 625 miles.

The group sponsoring the line is headed by Frank H. Robertson, former president of the Robertson Aircraft Corporation, now a unit of Universal Airlines, and includes Phil De C. Ball, baseball magnate, Harold Bixby, former president of the St. Louis Chamber of Commerce, Maj. William B. Robertson, brother of Frank Robertson and president of the Curtiss-Robertson Airplane Mfg. Co., and Harry H. Knight, broker. Maj. Robertson, Bixby, Knight, and Frank H. Robertson were prominent in backing Col. Lindbergh.

Pilots in the new service include Harlan "Bud" Gurney, former mail

Frank H. Robertson

pilot, Dan Robertson, Richard Happ, Jack McMillan, and Joe Read, all veteran transport men, none of whom have had less than 2500 hours in the air.

The service has been enthusiastically received at all points on the line and indications are that the demand will exceed present facilities.

Southwest Air Fast Express has inaugurated a new 18-hour passenger service from Fort Worth to New York. Passengers leaving Fort Worth at 7:30 a. m., transfer to T. A. T.—Maddox planes at St. Louis at 1:45 p. m., and board the Pennsylvania Railroad at Columbus, Ohio, at 6:45 p. m.

C. R. Beindorf piloted the first ship over the new route—the "Texan Limited." His mate was J. L. Dickerson.

Harlan "Bud" Gurney and Misses Irwin Leatherman and Mildred Banks, first passengers over the St. Louis-New Orleans route.

N. A. T. Plane Have Flown 7,330,179 Miles

NATIONAL AIR TRANSPORT, carrier of air mail and express between New York, Chicago, Kansas City, Fort Worth and Dallas, has completed four years of operation during which N. A. T. planes have flown a total of 7,330,179 or more than 293 times around the world.

Since the beginning of operations over the original Chicago-Dallas line on May 12, 1926, N. A. T. planes have carried 4,196,920 pounds of mail and 176,339 pounds of express. The daily mileage flown has grown from 2,000 miles in 1926 to the present day total of 8,600 miles every twenty-four hours.

On September 1, 1927, N. A. T. took over the New York-Chicago line, which had been operated prior to that time by the postoffice department.

Having concentrated for four years on the transportation of mail and express by air, N. A. T. is now preparing to operate an extensive air passenger service over its lines from the east coast to the southwest, connecting at Chicago with planes of Boeing Air Transport, operating between that city and San Francisco, this arrangement making possible the first all-air passenger service between the east and west coasts. Both the Boeing line and N. A. T. are units of the United Aircraft and Transport corporation.

Pan American and NYRBA to Occupy Dinner Key

Herbert S. Sawyer, acting as counsel for trustees of the John El Andros Estate, announced that a final agreement has been reached between his firm's clients and the executive officers of Pan American and NYRBA Lines by which it has been definitely established that these companies will occupy the territory known as Dinner Key.

While all the terms of the agreement have not been made public the people of Miami are assured by this arrangement that these two great aviation companies will maintain headquarters in Miami.

A New Texas-Mexico Air Line Planned

A NEW air line, known as the Lineas Aereos Central Mexicana, is scheduled to begin operations in the immediate future between San Antonio, Tex., and Monterrey, Mexico. The enterprise is being financed mostly by Mexican capital but there are a few Americans also interested.

The line will hook up at Monterrey by rail to Mexico City, and by plane to Tampico on the east and Torreon or Mazatlan on the west of Mexico.

Carlos Garza Gonzales, of Monterrey, is president of the new organization, and Major Frederick Lord is vice president and general manager. Major Lord is well known in aviation circles, and during the World War fought with the Royal Flying Corps and the United States Air Service.

A savings of about 13 hours will be effected by the aerial route over present railroad schedules. The flight will require three hours to complete, including a 20-minute stop at the border. The airline distance is about 250 miles. An extension of the line to Mexico City, possibly within 30 days after its opening, is now planned.

The fare to Monterrey will be the same as that charged by railroads, plus Pullman accommodation charges. Immediately delivery of two 6-place cabin ships is expected, with others to follow later. A daily round trip from San Antonio to Monterrey will be made via Laredo, according to present plans.

Headquarters of the company will be maintained at Monterrey where a 200-acre tract of land has been donated it by Gen. Juan Andreu Almazan, secretary of communications for the Mexican government, and Mauro Uribe, the latter being one of the principal stockholders of the new concern. The field will be modern throughout.

Municipal Airport for Lonoke, Arkansas

A lease on 160 acres of land two miles west of Lonoke, Arkansas has been closed and the work of preparing the land for a municipal airport will start at once.

The land leased is part of the Eborts Aviation Field, operated as a training school for aviators by the United States government during the World War, and since the field was abandoned shortly after the close of the war, it has never been cultivated or reclaimed. Very little work and expense will be required to place the field in the proper shape. S. S. Glover, Jr., is chairman of the civic airport committee and has charge of the work. The committee will start work at once placing markers and installing gas stations. Governor Parnell and United States Senators T. H. Carraway and Joe T. Robinson have been invited to attend the dedication ceremonies. William J. McKenzie, of the United States Department of Commerce, Washington, D. C., will also attend the dedication.

Chattanooga's new airport—Lovell field—is complete and in charge of Benjamin King. That city also has a new flying service, the Laženby Flying Service, Inc., capital stock $5,000.

Mexico and Texas exchange greetings preceding the flight of the first plane over the Lineas Aeros Central Mexicana passenger line.

Stout Explains Plans of Tri-Motor Lines

ALTHOUGH declaring he can see no commercial air travel improvement in San Antonio the past two years, the city nevertheless is due to be one of the greatest commercial airport centers of the South, in the opinion of William B. Stout, of Detroit, president of the Stout Lines and vice president of the Stout Metal Airplane division of the Ford Motor Company.

Stout recently visited San Antonio on a tour of inspection of his air lines and of connecting ones. He was accompanied by his wife and daughter. From San Antonio the party flew to Brownsville and Mexico City and later returned to San Antonio.

"San Antonio seems to have been thinking in terms of military flying too much and has lost sight of the commercial field," Stout said.

The noted manufacturer declared that military flying includes much stunting which the pilots must learn in order to defeat the enemy, but if a commercial pilot coming in with a load of passengers on one of the trunk lines banked 45 degrees in landing he would lose his job.

"The purpose of commercial aviation is to furnish transportation, not a thrill," Stout said.

At the present time the Tri-Motor Lines, a subsidiary of the Stout Air Lines, are operating from Detroit, Mich., to Dallas, and from Brownsville to Mexico City and thence to Central and South America. The ultimate plan of the company now is to fill in the gap from Dallas to Brownsville to make one continuous line from Detroit to Mexico City.

In speaking of engines, Stout declared that the Diesel type engine will be a great success in the field of commercial aviation and that already large trunk air companies have advanced plans for its installation.

"Until the time comes when we have built a plane that Mr. Average Citizen can see on Saturday, take a few lessons and fly it home Monday without the danger of killing himself as well as others, we have not made a success in the flying industry," Stout said.

However, in the opinion of Stout, such a success will be realized within a short time, due to wonderful improvements that have been made along this line very recently, and some public announcements are scheduled for the near future.

Airway Radio Station At Sky Harbor

ADDING another link to the growing network of airway radio communication systems throughout the country, station WWAC, department of commerce station at Tennessee's Sky Harbor, near Nashville, is now on 24-hour operation.

With two former Atlanta operators, J. N. Nowicki and H. V. Smith, assigned to the Sky Harbor station recently, the Interstate Airlines airport now has two assistants added to Chief Operator James Wollon's radio staff, with possibilities for adding a third man shortly, officials said.

The Sky Harbor station operates on a frequency of 350 kilocycles, and is a link in the radio system in operation on the Chicago-Atlanta, Evansville-St. Louis mail routes of C. A. M. 30. Using both day and night frequencies, one of 3,350 kilocycles during the night, and 5,960 during the day, the government has provided equipment for the Tennessee's Sky Harbor station which will permit the operators to give voice messages to pilots flying the mail routes, by means of an airway radio telephone set, and enabling them to collect weather and other information for the use of fliers by means of a radio telegraph set, Chief Operator Wollon said.

The radio building, which is located at the southwest corner of the big airplane hangar, is 22 by 52 feet in dimension, while the radio room proper is 13 by 19 feet. At the end of the building a room has been set aside for a squash court, which has become a popular pastime with Interstate employes at the Sky Harbor airport.

While station WWAC is more or less an intermediate link in the Chicago-Atlanta radio system, official inspection of the building and equipment has given the station a first class rating, besides being pointed to as one of the most attractive and well-arranged stations in that part of the country, officials said.

Airways radio station at Sky Harbor, near Murfreesboro, Tenn.

Drastic Rate Reductions at Baltimore Airports

A reduction of approximately 70 per cent in air travel rates was put into effect recently by four leading airports of Baltimore, Md., in an effort to determine whether fear or prohibitive rates is keeping Baltimoreans "out of the air" and to stimulate greater patronage in city and field flights. The first day three of the local airports put "experimental" rates, about 70 per cent less than those formerly charged, into effect, it was found necessary to turn down scores when darkness put an end to the day of flying. At all of these fields—the Steinmetz Airport, the Gieske Airport and the Handler Field—records were said to have been broken for the number of passengers taken aloft in one day. The Curtiss-Wright Flying Service, Logan Field, joined the ranks of the "experimental" list.

At the Handler Field and Steinmetz Airport, flat rates of $1 per person have been established.

At the Gieske Airport a novel way of reducing the rate was undertaken, which captured the fancy of patrons. This consisted of weighing each person prior to going aloft on the flight and charging according to weight at the rate of one cent a pound. The Curtiss-Wright Flying Service also tried this method.

Mason and Dixon Resume Service to Detroit

The Mason & Dixon Air Lines, Inc., whose general offices and hangars are located at Lunken Airport, Cincinnati, have resumed their air passenger service between Cincinnati, Dayton and Detroit.

Four planes are scheduled daily except Sundays, the morning planes leaving Lunken Airport in Cincinati and Ford Airport in Detroit at 10:40 A. M. and the afternoon planes leaving both airports at 4:30 P. M., Eastern Standard Time. These planes land and take off from the Vandalia Airport in Dayton, Ohio, the interemdiate stop. The fare between Cincinnati and Detroit is $15.00. The schedule is on a two hour and forty minute basis.

All metal, seven passenger Flamingo planes, powered with the Pratt and Whitney 420 horse power "Wasp" motors are being used.

Nashville to Construct A-1-A Airport

Nashville, Tenn., took the first major step looking toward the securing for that city an A-1-A municipal airport when the city council passed a bill on third reading designed to make a full fledged commission out of the Nashville Airport Advisory Committee. The new bill as passed gives the Airport Commission full power to select and contract for the purchase of an A-1-A airport at a cost not to exceed $1,000,000.

James E. Caldwell, of Caldwell & Company, and president of the Fourth and First National Bank, is chairman of the committee.

The next major step looking toward the acquisition of the much needed airport will be the election that is being held June 26 for the purpose of voting on the $1,000,000 airport bond issue, which is expected to carry.

Prisons are growing airminded, too. A flying field is being constructed on the State Prison Farm at Raiford, Fla., under the direction of its superintendent, J. S. Blitch. A field large enough for two 2,500-foot runways of 500-foot width has been selected and the prisoners are rapidly turning it into a completed airport. "In case of epidemics or critical illness," said Superintendent Blitch, "vaccines and medicines, as well as doctors and other professional help, can reach us with a minimum of delay.

Model Airport at Abilene

ANOTHER almost perfect Texas landing field has been provided in the new Abilene airport, just completed and which received its formal dedication on May 31.

The airport is located three miles east of the city of Abilene on a high site, gently rolling and perfectly drained. Runways have been treated with oil and asphalt base. Landing strips with open approaches are provided and are marked to control traffic.

Lieut Thad V. Foster of Fort Sam Houston, control officer for Southwestern Airways of the United States army, supervising fields in Texas, Arizona, New Mexico, Colorado, and Oklahoma, classifies the field as "one of the best layouts" ever to come under his observation.

The terminal was constructed by the B. Russell Shaw Company, under the supervision of H. B. Sudekum, chief engineer. L. E. Derrybery is airport manager.

The hangar, measuring 80 by 100 feet, has a clearance of 80 feet, with steel rolling doors, and is of steel construction with brick curtain walls covered with old ivory Italian stucco. A large lounge waiting room, ticket office and executive offices are located on the ground floor. Above is the field manager's apartment. A large lean-to-building houses heating plant, offices, rest rooms, shop and transformer rooms. Plans for further improvement include a two story hotel-cafe.

The lighting system includes green approach lights at the ends of landing strips, white boundary lights, a 10,000,000-candlepower revolving beacon and three floodlights. All obstructions are marked with red lights.

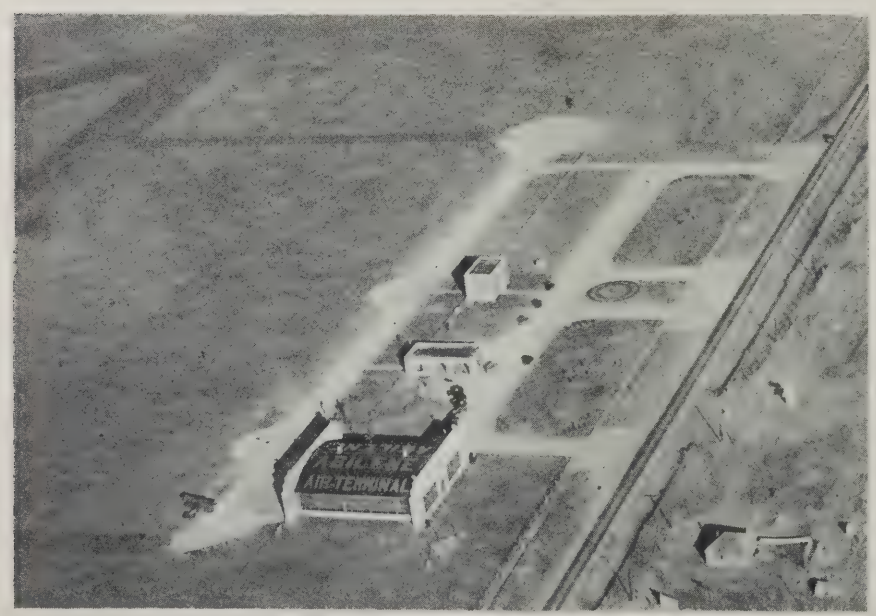
New Baltimore Airport Ready for Operation

The newest addition to the airports of Baltimore, Md., the Glenn L. Martin Airport, adjacent to the Glenn L. Martin Aircraft plant, will be ready for operation, according to to present plans, about June 15. It is now 80 per cent complete. The field which is in direct line with the Baltimore-Philadelphia - New York air line, will afford landings for both land and water, commercial and military aircraft.

Four Months Traffic of T. A. T. Maddux

Passengers carried by the T. A. T. Maddux Air Lines during April increased 1,082 as compared with March, according to the company's traffic report recently compiled. In April the total number of passengers carried numbered 5,165. The increase amounts to three eleven-passenger plane loads daily.

The report reveals a total of 13,-833 passengers have been carried over the air line in the first four months this year since the low rates have been in effect. The present rates are equal to and in several cases lower than rail Pullman fares. A fleet of eighteen multimotored passenger planes is now required daily to carry the traffic over the T. A. T. Maddux Lines.



Aerial view of the new Abilene, Texas air terminal

New York to Southwest Air-Rail Service

TWENTY-FOUR hour air rail passenger service between New York and the Southwest at less than rail and Pullman fares was inaugurated May 1 by combined schedules over the T. A. T.-Maddux Air Lines, Southwest Air Fast Express and the Pennsylvania Railroad. This new traffic accord between the T. A. T.-Maddux Air Lines and the Southwest Air Fast Express makes possible a new service providing a saving of 18 hours over the old rail schedules, at a saving of $6.24 in fares between Atlantic Seaboard points and Dallas and Fort Worth and other southwest cities.

Combined schedules provide for travel on the "Airway Limited" of the Pennsylvania Railroad between New York and Columbus, T. A. T.-Maddux Air Lines, Columbus to St. Louis, and transfer at St. Louis to the planes of Southwest Air Fast Express line. The traveler leaves New York at 6:05 P. M., eastern standard time and arrives in Dallas at 6:15 P. M. and in Fort Worth at 6:40 P. M., central standard time, the following evening. The southbound ship docks at Tulsa, Okla., at 3:55 P. M., where there is a connection made for Oklahoma City.

Eastbound passengers can travel over the same route, leaving Fort Worth at 7:30 A. M. and Dallas at 7:55 A. M., arriving in New York at 9:25 o'clock the next morning.

The service is presented in answer to a demand from business travelers for reduced time between the Atlantic Seaboard and the Southwest, and follows the large increase in air travel over both lines which has developed since the recent rate reductions which brought the air fares to the level of rail plus Pullman fares.

Western Air Express Stop at Fort Worth

Fort Worth has been added to the scheduled stops of Western Air Express, in spite of the "hump" in the municipal airport field, to which W. A. E. had objected. W. A. E. planes are now stopping on the through Dallas to Los Angeles and on the Dallas to Amarillo routes. The Dallas-Amarillo planes make connections for Denver, Kansas City and Los Angeles at Amarillo.

H. W. Mohrbacher, formerly with W. A. E. at Los Angeles, has been appointed Fort Worth traffic representative.

Aeronautics Department Lighting Program

LIGHTING of 3,000 additional miles of airway and the installation of routes for day flying on approximately 900 miles is provided for in the expenditure of $7,944,000 during the next fiscal year by the Aeronautics Branch of the Department of Commerce. Two-thirds of this sum will be used for the maintenance of air navigation facilities already constructed along the civil airways.

The radio program provides for the extension of the radio beacon system by the construction of 33 additional radio range stations and 20 airways radio stations for the broadcasting of weather information to pilots in flight.

The 3,000 miles of airways to be lighted during the next year will provide a southern transcontinental route between New York, Atlanta, Fort Worth, El Paso, San Diego, and Los Angeles. This will provide for operating the route on schedules covering two nights and one day. A day route with landing fields and weather service will be provided between Midland, Fort Worth and Birmingham. A lighted airway will be installed between Dallas, Little Rock, Memphis, Nashville and Louisville, forming an alternate route on this southern transcontinental system; and an additional airway to the East by the St. Louis-Indianapolis-Columbus - Pittsburgh - Harrisburg-Philadelphia-New York airway route also will be provided with air-navigation facilities during the next year.

A cut-off route between Richmond and Jacksonville will provide a lighted airway from Boston to Florida which will connect with the South American airways service involving the lighting of 550 miles from Jacksonville to Richmond. The installation of this airway also provides the alternate routes from New York to Florida, one route by way of the coast and the other along the foothills of the Piedmont section via Atlanta.

The number of miles of lighted airways in operation when this program is completed will be 17,500, which is about 75 per cent of the network of trunk airways being installed by the Federal Government. When this program is completed there will be 65 airways radio stations broadcasting weather information to pilots in flight on an hourly basis current weather iinformation is gathered along the route by a teletype system which will be extended to 8,500 miles by the end of next year. Upon the completion of these stations there will be scarcely a square mile of area where flying actually takes place that a pilot can not receive hourly broadcasts of weather information affecting the safety of his flight.

Nine radio range beacons of the aural type are in operation and twenty-six additional stations are under construction.

The development of the visual type of beacon has been completed by the Bureau of Standards and seven visual-type radio range beacons have been built by the Airways Division for trial under service conditions.

THE EFFECT OF RATE REDUCTIONS

DURING the first four months of 1930, 20,320 passengers flew over the American Airways' lines. This is only 339 passengers less than the number which was carried all last year. Traffic officials report a steady increase in the number of air passengers since the reduction of fares. During April, 6,741 persons were flown on the company's line which was an increase of 8.9 per cent over the number carried in March, a record month. Records covering a recent 60-day period showed the average length of air trips on the company's lines was 274.6 miles.

Twenty-Four Hour Weather Service at Dallas

Twenty-four hour weather service for fliers will be rendered at Love Field, Dr. Joseph L. Cline, director of the Dallas, Texas, weather bureau, has announced. Three observers will be on duty at the flying field office, to be located in the Southern Air Transport administration building.

Information supplied pilots will include wind velocities and direction of upper air currents and weather conditions at airports where landings are contemplated.

N. A. T. Pilots Talk To Ground Stations As They Fly

National Air Transport has equipped a number of cargo planes with radio voice transmitters as a step in the development of two-way communication between planes in flight and ground stations.

These planes, operating on regular schedules on the eastern division of the N. A. T. lines, are in constant touch with ground stations while in the air. This enables the pilots to ask for special weather reports and other information vital to scheduled air transport operations, as well as enabling them to report their exact position every ten minutes while traversing the airway between stations.

With the transmitters installed in the planes, pilots talk to ground stations at distances up to 200 miles while the planes are traveling 125 miles an hour, at varying altitudes.

The experiments with talking by radio from airplanes in flight have proven so successful this far that N. A. T. officials are confident that the equipment will do much toward the successful operation of the air passenger service which will be started over the N. A. T. lines in the near future.

Airport and Flying School for Fayetteville, Ark.

Bonds to purchase and improve a $20,000 airport were voted at Fayetteville, Ark., recently. At present, Fayetteville has only a temporary landing field—a tract of land, tiled for drainage, located two miles south of the city, which has been used as an airport for the past year. This site will be purchased, according to present plans, and 28 adjoining acres added to it. Runways and night lighting equipment will be installed, and the construction by the city of a new hangar is contemplated, work on these improvements to begin as soon as possible.

Ralph Heimer, a commercial pilot from Manhattan, Kansas, has been granted a permit to use the field for commercial flying and for instruction purposes. With the improvement of the field, he states that additional planes and equipment will be added to his flying school.

Thompson Aeronautical Corporation's entire fleet of mail and passenger planes will soon be equipped with two-way radio telephone outfits. The equipment is being designed especially for TAC planes by the Radio Corporation of America. The sets will weigh less than 90 pounds, engineers state.

NEW AIRPORT DEVELOPMENTS

Birmingham, Ala. — Grading is under way at the new Birmingham municipal airport. The contract involves grading of approximately 300,000 cubic yards at a cost of $110,750.

Florence, Ala.—A 105-acre airport site has been chosen here and the Chamber of Commerce will erect hangars and other buildings, when the field is ready.

Oneonta, Ala.—The local airport here is nearing completion.

Forest City, Ark.—An 80-acre airport was dedicated here May 5.

Punta Gorda, Fla.—A tract has been secured for a municipal airport here. Runways 1900 feet will be provided.

Greensboro, Ga.—The local airport, Harris Field, has recently been improved by grading and leveling of runways.

Dalton, Ga.—Work on the local airport has been completed. Dedication ceremonies were held May 30.

Middlesboro, Ky.—An appropriation for purchase of an airport at Colson Field was made recently by the Bell Fiscal Court.

Baton Rouge, La.—Bids for the erection of an administration building at the local airport will be called for immediately. Hangar and lighting equipment is also to be installed.

Laurel, Miss. — Two additional tracts have been secured adjoining the municipal airport here and will be conditioned for use at once.

Clinton, Okla.—An addition to the local airport is planned. Enlargement of the field will be made with a view to securing an air mail stop on the Oklahoma-Tulsa route.

Johnson City, Tenn.—The Tennessee Aero Corporation has leased a tract near here and grading and clearing are now under way.

Covington, Tenn. — A 120-acre site has been leased near the city for a municipal airport.

Dyersburg, Tenn.—Improvements are being outlined for the local airport. Representative Larry Hughes is aiding in the improvements.

Chattanooga, Tenn.—Lovell Field, the municipal airport here, is ready for formal opening.

Borger, Tex.—A ten-year lease has been taken on a sixty-acre tract here for a municipal airport. Contract for a $3,500 hangar has been let.

Sinton, Tex.—A 24-inch beacon, of two million candle power, and boundary lights will be installed at the local field.

Uvalde, Tex.—A new airport will be developed here by private interests. Five hundred acres on the United States Highway Number 90 have been chosen for development.

Anderson, S. C.—An airport comprising 25 acres known as the Country Club Airport and home of the Anderson Flying School was opened here early in May. Construction of a hangar is to be started soon.

Greenville, S. C.—Grading at the local airport is complete and contract for lighting will be let immediately.

Charleston, S. C.—A campaign is under way to provide a more adequate airport for Charleston.

Charleston, W. Va.—Construction was begun on the local airport recently. The field has been leased by the West Virginia Airways.

Breaking the Monotony for Air Passengers

On the theory that air sickness is at least partly due to boredom, Southern Air Transport, on its Tulsa-Dallas leg of the American Airways Dallas-Cleveland line, is trying an interesting experiment.

At the suggestion of Jerry Marshall, operations manager, M. B. Andrews, in charge of S. A. T. radio communications, has rigged up a miniature radio broadcast station within the Fokker F10, A 12-passenger ship.

THE lighting program of the Aeronautics Branch will provide for a southern transcontinental route via Atlanta and Fort Worth, also an alternate route via Dallas, Memphis and Louisville. There will be 17,500 miles of lighted airways when the program is completed.

In operation, the pilot talks into a microphone, and the passengers listen in over headsets. The sets plug into jacks installed over the windows beside each seat.

Periodically the pilots on the big Fokkers talk to the passengers about the route, as a supplement to the strip maps furnished at the beginning of the journey. Interesting information about the landscape and conditions of the flight is given.

The installations already completed on the Fokkers are to be put on all other ships of S. A. T., it was announced.

Receiving sets for the pilots have been installed. These are designed to pick up government weather reports while in flight.

S. A. T. is installing at some terminals loud speakers in waiting rooms and on enplaning lines, to carry announcements of arrival and departure of ships and other information interesting to passengers.

Air line connections to Detroit and Colorado have been added by American Airways to its Dallas-Cleveland service. Through connections with the Stout Air Services at Chicago, passengers leaving Fort Worth or Dallas in the morning can be in Detroit at 8 p. m. Connections over United States airways at St. Louis are furnished to Boonville, Salina, Hays, Goodland and Denver with arrival at Denver scheduled at 4 p. m.

Knoxville will dedicate its new airport—the McGhee Tyson Airport—on August 1 and 2. A program is being planned by the Young Men's Division of the Chamber of Commerce.

Fair passengers aboard an S. A. T. plane. Jerry Marshall, operations mgr., has tackled the problem of keeping S. A. T. passengers amused in flight.

Aeronautical Personalities

A Summary of Seventeen Years of Flying

By Lyle A. Thro
Southern Air Transport Division
Manager at Dallas

(Thro, one of the oldest fliers in the country, in point of experience, having made his first solo flight in 1913, established in 1928 what was then a world's record of 543 consecutive loops.)

I WAS hardly out of high school when I started fooling around with airplanes. Finally I built a

Lyle Thro

ship copied from an old pusher model that a friend owned and a little later began to learn to fly. I worked around the old Cicero Field near Chicago, during 1912, 1913 and 1914. That field is gone now and forgotten. I made my solo there in 1913.

Solo flights in those days were considerably different from those of today, which students make after 10 hours or more of flying with a pilot in the front cockpit. Then the old pushers, a mere framework with a single seat out in front, did not provide space for an instructing pilot, and the would-be flier trundled the ship around the field alone until he felt that he understood the controls. Then he'd make short hops, lifting the ship up a few feet and setting it down again.

Those were the days when determining a successful flight was a matter of fine discrimination. When the student got ready to make a flight, observers went out and lay down on the field, sighting along his path. If they could see daylight between the wheels and the ground, the pilot had made a flight and was duly congratulated.

I did that and was pronounced a finished flier. So I began doing exhibition work, shipping my plane from fair to fair and making short flights in front of audiences that half expected to see me killed.

Then I got my first tractor and flew it over Minnesota, Iowa, Illinois and Wisconsin. It's in a private museum somewhere in a flying school up there.

After the war I continued commercial flying and in 1919 flew the mail between Chicago and Minneapolis, and later a passenger liner over the same route.

One of my toughest jobs was flying the mail over the mountains from Tampico to Mexico City, although the line had tri-motored transport planes. We used to drop the pay rolls of some of the oil companies from these ships. But I couldn't stand the chili and hot tamales and the language, so I came back home.

E. C. Epps, who has been connected with the Garland school, at Tulsa, Okla., for several months, has been made Garland's chief pilot. Epps was formerly chief pilot for the Wisconsin Air College at Janesville, Wis.

George A. Stephens was named director of student relations for the Garland school. Stephens formerly managed the Russell airport at Henryetta.

W. B. McAllister, pilot of ship 86 on the Dallas-Brownsville line of S. A. T., carries a special newspaper route. His "subscribers" are two small boys, Warren and Gail Hedrick, who live at a lonely railway watering station on the million-acre King ranch in South Texas. Papers and magazines are delivered daily to Caesar Kleberg, in charge of the enormous estate of Mrs. Henrietta M. King, as the plane passes over Norias Ranch.

Her Hobby Was Singing, Now It's Flying

RETHA McCOLLOUGH, of Beaumont, Texas, is one of the charter members of the 99's who will soon be taking the tests for a limited commercial license, though she says she does not intend to make her bread-and-butter money by flying commercially.

She was studying voice with serious intentions until the flying fever got such a hold on her that now the only singing she hears is that of the wires and struts. She is an arithmetic teacher in the Beaumont schools, and when school is out she skips out to the airport for a little flying, or to ask a few questions about motors or do a little ground flying with the mechanics.

Lieutenant C. C. Scott, now a mail pilot on the New Orleans-Houston branch of the S. A. T., was her instructor.

"Landings and finding enough cushions so that I could see out of the cockpit were my greatest diffi-

Retha McCollough

culties in learning to fly," she says. She has had time on a Waco and Travel Air, she says, and adds, "and twenty very exciting minutes when Clyde W. Ice let me think I was flying his tri-motored Ford."

She says her greatest ambition at present is to convince the operations manager at the Beaumont airport that she should be allowed a ship for a solo to a nearby town.

John Blaine, formerly of the Southern Air Transport, has assumed the management of the Big Spring, Texas, airport He succeeds Charles Smoot, resigned.

Long Distance Flights are Easterwood's Hobby

THE youthful ambition of Colonel William E. Easterwood, Jr., of Dallas, Texas, was to be the best traveling salesman south of the Mason and Dixon line. This ambition, according to those who know him intimately as Bill, was realized long ago, and the Colonel now has another ambition which he is determined to realize—that of seeing a foreign airplane land on the runways at Love Field.

Col. William E. Easterwood

The Colonel recently posted $25,000 for a Rome to Dallas flight by way of New York and $25,000 for another Hongkong to Dallas flight by way of Tokio, Honolulu and California.

"If the Rome to Dallas flight fails," said Colonel Easterwood, "then I'll post $25,000 for a Paris to Dallas flight. I am determined to see a foreign ship settling on the runways at Love Field. I'll live and die trying to bring this to pass."

Colonel Bill served during the World War with the marines as captain. He got his colonelcy on the staff of the Governor of Texas, the Governor of New Mexico, Aviation Staff of Old Mexico, and from the Republic of China and from Italy. He has loving cups galore; honors and titles. He is a self-made millionaire.

To get back to Colonel Bill's early days. He became a traveling salesman and his ambition from the beginning was to be the best traveling salesman in the South. And when he gave up traveling to locate in Dallas he was rated as an A-1 salesman.

In 1922 he came to Dallas and set up in business for himself on the block on Akard Street, now known as Easterwood Block. He became exclusive factory representative for many large eastern firms. Because of the prestige which he had gained through his own efforts in the field, the Listerated Gum Corporation of New York made connections with Colonel Easterwood for marketing their products. The Colonel discarded all of his other products and accepted the Listerated Gum contract exclusively.

In 1924 Colonel Easterwood put on an extensive advertising campaign, and as a result, Orbit became the most popular chewing gum on the market—a nationally known product which made other chewing gum companies sit up and take notice. In 1925 William Wrigley, Jr., started negotiations for purchase of the Orbit Listerated business and when the deal was consummated he retained Colonel Easterwood, Jr., as head of the southern branch.

Colonel Easterwood became interested in aviation several years ago and purchased a plane in which to advertise his business. Since that time he has been solidly back of aviation. He has predicted, and has lived to see his predictions come true. He says that eventually we will build planes which will carry three to four thousand passengers, and capable of a speed of 1,000 miles an hour. It sounds incredible, but as he points out, twenty years ago the present situation would have sounded just as incredible.

Lieutenant Donald C. Walbridge, who recently resigned from the Army Air Corps, has been appointed Director of Training at the Curtiss-Wright Flying Service, Kansas City. During the past three and one-half years Mr. Walbridge has been on duty at Brooks Field in the capacity of flight instructor on both primary and advanced work and for several months before his resignation was final check pilot and member of the Faculty Board.

George Cobb, operations manager for the New York, Rio Buenos Aires Air Lines, will soon leave Miami for Port au Prince to become divisional superintendent there. R. H. Mcglohn will replace Mr. Cobb on the Havana-Miami division in Miami. The NYRBA Line is building a base at Port au Prince which will be the first overnight stop for the air liners operating in the Miami South American service.

Her Pancakes Are Now the Culinary Variety

PRIVATE license No. 7500 is held by Edwyna McConnell. By the time this gets in print she probably will be listed by the Department of Commerce as a Limited Commercial—that is, if the weather gives her a break, which she is now awaiting to take the next step up the ladder.

A permanent flying job she says is now her chief ambition. She has had sixty hours official time in the air.

She is a native of Fort Worth, Texas, where she is employed by the United States Department of Agriculture as a stenographer. When she has time off from her work she spends it in learning about airplane motors, that is if the weather is too bad to go aloft.

Miss McConnell says she did not have much trouble in learning to fly with the exception of a tendency to pancake upon landing. But with the aid of her instructors, Skeet Perkins, Al Harvey, Andy Burk, and six others whom she does not mention, she was able finally to limit her pancakes to the culinary variety. She took her instruction on a Robin, Fleet and Command-Aire. She is a member of the 99's.

Edwyna McConnell

Lyman Woodruff, formerly district traffic manager of Continental Air Lines, division of Universal, Louisville has returned to his former post at Bowman Field, Louisville after an absence of a year, during which he was stationed at various fields. Woodruff was the first operating manager for Continental in Louisville, when the line was inaugurated.

The "Good Old Days" of Plane Development

AN INSPIRATION for the layman and aviation expert who at times become impatient or doubtful of aviation's progress is found in the recollections of two men responsible for vital parts of the Eastern Air Transport organization.

The men are J. C. Ray, superintendent of engine overhaul, and M. B. Wagner, superintendent of plane maintenance.

Both men started their aviation careers with the Curtiss company;

J. C. Ray

Ray in 1914 at Buffalo, and Wagner in 1915, at Hammondsport, N. Y.

"For many years after I started working on motors, a flight of more than an hour's duration without motor trouble was a real event, whereas now a motor failure is rare," Ray said.

"All set to go and purring like a kitten, the old motors use to break our hearts by fouling up spark plugs while idling on the ground. Fifty to seventy-five hours between complete overhauls was all that could be expected. Our Wright Whirlwinds now operate between 275 and 300 before overhauls."

E. A. T. mail planes now fly 5,066 miles daily and a crew of five men at the Candler Field depot, Atlanta, keep the 50 motors of the company in tip-top shape. With the best motors available even as late as 1918, Ray believes that it would take seventy-five mechanics or more to keep the engines running if they were in use today on the E. A. T. lines.

Wagner's first job when he went to Hammondsport as a boy from his home at Bath, N. Y., was to assist in the reconditioning of Professor Langley's famous plane. The wierd looking plane was not redesigned, Wagner emphatically declared, and the only preparation for its successful flight was the repair of broken parts and the installation of a motor with adequate power.

"Did you make many flights while you were at Hammondsport?" Wagner was asked.

"No, sir. Not with wood, glue and wings falling off. We used to tinker with a plane for a week to get it to fly a day then," Wagner replied.

"Do you fly now?"

"Every chance I get," Wagner said.

Ray and Wagner have worked on almost every type of plane and motor that has been designed and a brief inventory of the equipment reads like a history of important events in aeronautical development.

At Buffalo, Ray worked on the early Curtiss motors, including the V-2, K-6, C-6, K-12, D-12, V-1400, an aircooled radial and a Diesel; the latter two unsuccessful, were abandoned.

Ray also worked on the frame and installation of an OXX-6 motor in a blimp which was covered and flown at Akron, Ohio.

When the war started Ray left Curtiss to serve with the Navy and rejoined Curtiss at the end of the war. In 1925 he went with Pitcairn Aviation, whose air mail lines were later taken over by Eastern Air Transport.

While with Pitcairn Ray was responsible for beating the Curtiss interests with their own products. Ray rebuilt a C-6 motor for a Pitcairn racing plane flown by J. C. Ray (no relation) in which the latter consistently beat Casey Jones, Curtiss speed king, using the same motor.

Speed boat motors also commanded Ray's attention and at Detroit he had the gruelling experience of pumping gasoline for 85 miles in the Curtiss-Wilgold, to win second place, when the regular fuel pump failed. The hand pump was so close to the side of the boat that every stroke scraped skin off Ray's hand and the end of the race left his hand bare to the knuckles.

M. B. Wagner

The privilege of working on Ruth Law's plane, the Langley ship and the America, a boat designed for a trans-Atlantic flight, were among the jobs that brought thrills to Wagner at Hammondsport.

Later with Curtiss at Buffalo, Garden City and Rockaway Beach, Wagner helped with the motor installation on the NC-4 Navy boat which crossed the Atlantic, worked on two-place F boats and any number of queer designs. Among the freaks was the "life boat." This flying boat had the motor in the hull, connected to the propeller by shafts and a universal joint. The ship was so made that the wings could be cut loose and the motor connected to a water screw, transforming the plane into a boat. Another was the aerial taxicab, also with a shaft-driven propeller.

With the Aerial Service Company at Hammondsport, Wagner worked on two ships for the Pulitzer races at Selfridge Field. Shortly before the races, trouble developed and wagner was forced to work day and night to rectify the defects. After okaying the ships Wagner was unable even to stay awake to see the races.

Among the features of the racers

were retractable landing gears. Bert Acosta, testing one of the ships before the races, landed with the gear up and Wagner was shaken out of his sleep to repair it. A new landing gear was installed and Wagner was asleep again before the races started. Motor trouble resulted in a poor showing and Wagner considered his time well spent in sleep instead of as a spectator.

Wagner served in the Navy during the war and after working at various Curtiss plants joined the Pitcairn organization in 1927.

All work on E. A. T. planes has been concentrated at the Candler Field depot and company pilots say they would rather fly a ship checked by Wagner with a motor overhauled by Ray than the same plane fresh from the factory.

Steinger Made Manager of Universal Supply

The appointment of Joseph Steinger as general manager of the commercial division of the Universal Supply unit of American Airways, Inc., was announced recently by Halsey Dunwoody, executve vice-president of the Universal Aviation Corporation.

For the past ten years Mr. Steinger has been prominent in the auto-

Joseph Steinger
(Universal Air Lines System photo)

motive industry in the Middle West.

With the announcement of Mr. Steinger's appointment, Mr. Dunwoody also announced that the supply department of Universal Aviation Corporation and Southern Air Transport were merged recently into one of the largest airplane parts and supply divisions in the country. The unit will be known as the Universal Supply Division, with headquarters at St. Louis municipal airport.

Last year, Steinger purchased an airplane and made a three-months tour of the United States, studying the commercial aspects of aviation. During the past five years he has sold more than 5,000 automobiles. His last connection with the automobile industry was that of president of the Tuthill-Gardner Motor Corporation of St. Louis, which position he held for four years.

Arcier Now Chief Engineer of Waco Aircraft Co.

The Waco Aircraft Company, Troy, Ohio, has secured as chief engineer and designer A. Francis Arcier, form-

A. F. Arcier

erly engineer and designer for Handley Page, Fokker, and General Airplanes Corporation.

He assumed his duties early in May taking complete charge of all engineering and development work.

Mr. Arcier is well-known in military circles, having frequent contacts with the Government engineers at Wilbur Wright Field, the Government experimental station.

Mr. Arcier ranks in aeronautical circles as one of the ablest airplane designers and engineers. He has a notable record of achievement and has had seventeen years' experience designing and manufacturing commercial and military planes both in America and Europe. He is an Associate Fellow of the Royal Aeronautical Society and holder of Aviator's Certificate No. 856 issued by the Federation Aeronautique Internationale.

Glenn E. Messer has resigned as vice-president and general manager of the Southern Aircraft Corporation, Birmingham, Ala., according to announcement by President Perry R. McCormack. He also has servered his connection with Messer Field. Messer is one of the older fliers in the county, having taken up aviation in 1908.

Miss Ferguson Rides Both Horses and Airplanes

WHEN Frances Ferguson of Ponca City, Oka., is not participating in a horse show, golfing or swimming, she is usually in the air piling up time for a limited commercial license. She now holds private pilot license No. 8695, with over 40 hours in the air to her credit.

Miss Ferguson says the most difficult experience in learning to fly was to distinguish the point at which the ship was about to stall in landings so as to get the tail down at the right moment. Under the instruction of Al Leitch, veteran flyer and sportsman of Ponca City, she soloed after 11 hours and 40 minutes and soon rolled up enough time for her private pilot's license.

Miss Ferguson is private secretary to one of the Continental Oil officials

Frances Ferguson

in Ponca City. She says her entrance into flying was more or less by accident but that the thrill of flying has caused her to seriously consider flying as an occupation, either in a practical sense or from a journalistic standpoint, and she says that she is now quite enthusiastic over the commercial possibility of combining aviation with journalism.

Harry P. Williams, of Wedell-Williams Flying Service, New Orleans, recently purchased a Wasp powered Ryan and two Lockheed Vegas from the Detroit Aircraft Corporation with which to open an air line between New Orleans, Shreveport and Fort Worth, Texas.

George W. Massey of Wilson, North Carolina, was recently awarded a Limited Commercial License at Parks Air College.

General News of THE AVIATION INDUSTRY

Service to South America As Seen by Lindbergh

NIGHT air mail and finally night passenger service will some day be instituted between North and South America, Col. Charles A. Lindbergh told press representatives at Miami early in May when he landed there to conclude his flight to survey a more direct route to Cristobal, Canal Zone.

His trip, which split the Lindbergh Circle and laid down a more direct route between Florida and the Central American city, affording seven-day mail service between New York and Buenos Aires, was described as "uneventful" by the "flying Colonel."

"So far as I am able to see now," he said, "only faster planes can reduce the air mail time between North and South America over Pan-American lines."

His flight was across the Caribbean Sea, and from Havana was almost directly southward to Cristobal.

Declining to fix any definite time when night air mail between the two continents might be expected, Col. Lindbergh said night air mail would come first and later night passenger service, and that night flying might be expected as soon as traffic justified the expense.

Col. Lindbergh would not agree that airplane construction would tend toward the low-wing type, such as is employed in his Lockheed Sirius, but did say there would be more development of this type of plane. He said the advantages of this type were too numerous to list, but named among the most important "a law center of gravity, the advantage of folding the landing gear under the wing and improved vision for smaller type ships."

While on the return flight to Miami, Col. Lindbergh personally tapped out a radio message which was received at the Miami station of Pan-American Airways, Inc. The message simply stated the position of the plane, He laughingly denied he is a radio operator, and said his knowledge of the code was scanty, and his speed limit about 12 words a minute.

He was accompanied on the flight by Basil Rowe, co-pilot, and Bert Denicke, radio operator. Both are employed by the Pan-American Airways, of which Col. Lindbergh is technical advisor.

Organization of Junior N. A. A. Chapters

Two junior chapters of the National Aeronautic Association, organized recently at San Antonio, Texas, are the first of their kind in the United States to be affiliated with the N. A. A. and form the nucleus of a nation-wide movement to organize others, according to Jack Beretta, Texas governor of the National Aeronautic Association.

One of the chapters is at Main Avenue High School and the other

Jack Beretta, right, presents Jr. N. A. A. charter to Frederick Thomson

at Brackenridge High School. The former, comprising 38 members, has just received its charter from N. A. A. headquarters at Washington, D. C. The latter was formed several months ago and now boasts of 46 members.

Beretta said that when the chapters were first organized they were regarded merely as a local undertaking, but when national N. A. A. headquarters were notified of the fact they were much elated with the idea and declared they would encourage other cities to follow suit and use the San Antonio junior bodies as a mucleus in the establishment of others.

Activities of the juvenile bodies include the building of model airplanes, study of avation, participation in civic aeronautical events, etc.

Preparations Made for National Air Races

PREPARATIONS are under way in Chicago for the National Air Races to be held August 23 to September 1.

Business leaders of the city have oversubscribed a quarter of a million dollars for organization expense. Cash prizes totaling $100,000 will be awarded the winners.

Cliff Henderson, who directed the Los Angeles and Cleveland races, is managing director for the Chicago event. The field operations will be under the direction of Major Shorty Schroeder. Major Reed Landis, world war ace, is director of advertising and publicity.

All of the established service races and events, Army, Navy, Marine Corps, National Guard, are included in the tentative program but civilian events will occupy a dominating place throughout the meet.

Five air derbies will inaugurate the races. Two will be for ladies only. Eastern flyers with planes in the 510-cubic-inch class will assemble for the women's Dixie derby which will carry them two thousand miles down the Atlantic seaboard, westward skirting the Gulf of Mexico, and thence up the Mississippi Valley to Chicago. A women's California derby will include entries in the 800-cubic inch class and will take off from some west coast city to be selected later. The men's derbies include a non-stop event, a New England derby from Boston and a Quaker derby from Philadelphia.

Federal Air Board Named at Louisville

A Federal air board has been named at Louisville for examining pilots for reserve officers ratings, under orders received from Fort Hayes, Columbus, O.

Members of the board are Capt. F. E. Galloway, commanding officer, Bowman field, chairman; Captains Justice K. Hetsch, Sidney W. Park, Alin L. Pritchard, L. S. Vance and George D. Converse; First Lieutenants Duncan McCallum, and Albert Woody; and Second Lieutenants John Russ and Roy L. Mitchell.

C. W. Short, Jr., Heads Airport Division

CHARLES W. SHORT, JR., manager of the Tulsa Municipal Airport, has been named permanent chairman of the South-Central division of the airport section, Aeronautics Chamber of Commerce.

The selection of Short as chairman of the division, comprising Colorado, Kansas, the western half of Missouri, Arkansas, Louisiana, Oklahoma, Texas and New Mexico, was announced by F. B. Rentscheler, president of the Aeronautical Chamber of Commerce. He has also been

C. W. Short

made a member of the airport section's executive committee.

Notification of the appointment from New York also announced that R. F. Craig, manager of Kansas City's Fairfax airport, has been made secretary of the South-Central division.

Short attended the airport managers' convention at Buffalo, held May 14, 15 and 16, and read a paper on "Traffic Regulations" at the meeting. He will probably call a division meeting for Colorado Springs sometime in July.

Readers of SOUTHERN AVIATION will recall Mr. Short's interesting and informative article, "Tulsa's Airport Leads the World," which appeared in the April 15 issue.

Tennessee Aeronautic Commission Meets

The Aeronautic Division of the Tennessee State Highway Department, which was created by an act of the 1929 legislature, held an organization meeting recently in Nashville, at which time Larry W. Hughes, of Memphis, who introduced the bill creating the commission, was elected secretary. R. H. Baker is chairman of the commission. The commission decided to prepare data on the airports and emergency landing fields of the State and issue a map showing these various locations. Members of the commission are: R. H. Baker, Col J. W. Canada and Larry Hughes, Memphis; Albert Williams, Nashville; Herbert Toomey, Johnson City, and John Outlaw, Clarksville, Tenn. Two other members are yet to be named by the governor.

New Dallas Distributor of Motors and Supplies

The owners of Standard Service Parts, Inc., automotive parts jobbers, 2702 Commerce St., Dallas, Texas, have organized a new company to deal exclusively in aeronautical supplies and service. The new company is called Macbeth Brothers and has its headquarters at Hangar No. 1, Love Field, Dallas.

Here a complete machine shop service is offered, with equipment being especially adapted for airplane motor work and a stock of parts and supplies maintained. Macbeth Brothers are distributors for Kinner motors and maintain an authorized Kinner service station for all motor work including major overhauls. Special Kinner tool equipment is also maintained as well as the regular equipment, flexible enough to handle work on all motors. H. C. Macbeth is president of the company and L. A. Macbeth, secretary and treasurer.

Aviation Purchasing Agents Meet June 16-19

J. S. Beauchamp, Fort Worth, purchasing agent for Southern Air Transport, Inc., will see his plan for a group meeting of aviation purchasing agents realized in Chicago on June 16, 17, 18 and 19, when the National Purchasing Agents Association convention will be held. Aviation purchasing agents have been organized at the instance of Beauchamp and E. Van Vechten of National Air Transport through a series of letters. Van Vechten will direct special meetings of the aviation purchasing agents. Beauchamp will be a speaker before the general convention.

H. S. Jones of Midland and Fort Worth, Texas, has been appointed Texas state distributor of Curtiss Moth airplanes, with headquarters at the Fort Worth Municipal Airport.

American Military Planes On Foreign Mission

LIEUTENANT JAMES DOOLITTLE, accompanied by Captain James H. Cannon and Lieutenant James E. Parker, with American representatives of the Curtiss-Wright Corporation are on a four months tour of European countries for the purpose of demonstrating American military aircraft.

The mission landed in Athens, Greece, on April 21 where they took charge of the American military planes which had arrived at Athens, accompanied by two American mechanics, several weeks earlier. A Curtiss Hawk and a Curtiss Falcon, standard pursuit and observation planes in the United States army and navy and marine corps, the Curtiss Fledgling used for training in the navy, and a Curtiss Robin cabin monoplane, comprised the fleet which will be demonstrated in approximately twenty countries in Europe before August 1, when the mission is scheduled to sail for America.

High government officials have greeted the flyers in many countries already and have expressed satisfaction with the performance of the American planes.

Major Melvin Hall, Curtiss Wright representative in Europe, and W. F. Goulding, of the New York office of Curtiss Wright, both of whom saw active service on the western front during the war, are accompanying the tour.

Lieutenant Doolittle, one of the world's leading military flyers resigned from the service early in the year to enter commercial aviation. After organizing the aviation department for the Shell Petroleum Corporation, he consented to make the European tour. Pilots Cannon and Parker were granted leave from the air corps to participate in the tour.

C. J. Lucas, Tulsa pilot and world war veteran who served in the 96th Aero Squadron with Eddie Rickenbacker, Quentin Roosevelt and other noted airmen, has been appointed sales manager for Oklahoma by the Curtiss-Wright Company.

C. C. Parlin, manager of the Research Department of the Curtis Publishing Company addressed Nashville's civic organizations on "The Development of Aviation" at the Andrew Jackson Hotel recently.

Plane Engineers Predict Future Developments

AN AIRPLANE so simply constructed and easy to operate that a person who never flew before can buy it on Friday night and fly it away Monday morning "with the entire acquiescence of the Department of Commerce" was predicted by W. B. Stout, head of the Ford Motor Company's airplane division and president of the Stout Engineering Laboratories, Inc., in a short address before the Fifth Annual Aircraft Engineering Research Conference, May 13, at Langley Field, Va., under the auspices of the National Advisory Committee for Aeronautics.

But this wonder plane will never materialize, Mr. Stout said, "until aeronautical engineers get off the beaten path, build their planes simpler, display real ingenuity, take some chances and show some real sportsmanship. When that day comes the world will see a real revolution in aviation."

"Aviation, from an engineering standpoint, has been stagnant during the past two years," Mr. Stout declared. "Aeronautical engineers have been more interested in attempting to make money than in building new types of airplanes. None of us are building today the plane that the public wants.

"Aeronautical engineers should take a tip from the radio and motion picture industries. During the past two years these two industries have junked practically all their old output to bring out in its place something entirely new and immeasurably better.

"If the airplane industry is to make a profit it must do the same thing—throw overboard the old planes and methods of building planes, even though it cost millions, to bring out the plane that the public wants.

"We must build a plane that is simpler and easier to operate. It must and will have but one control. Either rudder or ailerons must go.

Expected Changes

"The airplane of two years from today will be so entirely different from the planes of today that there will be no comparison. It will have a different power plant. The landing gear will be different. In fact, it may have no landing gear at all, as we know landing gear today, thanks to what we are learning from gliding. It will have entirely different controls. It will be short on 'gadgets' and long on flying qualities. The wing spread will be much less than it is today.

"Everything will be changed about it and, in addition, it will be so attractively built and so beautful a piece of machinery that even the man who can't fly, on seeing it, will exclam 'Gee, that's pretty! Wrap me up a half dozen!"

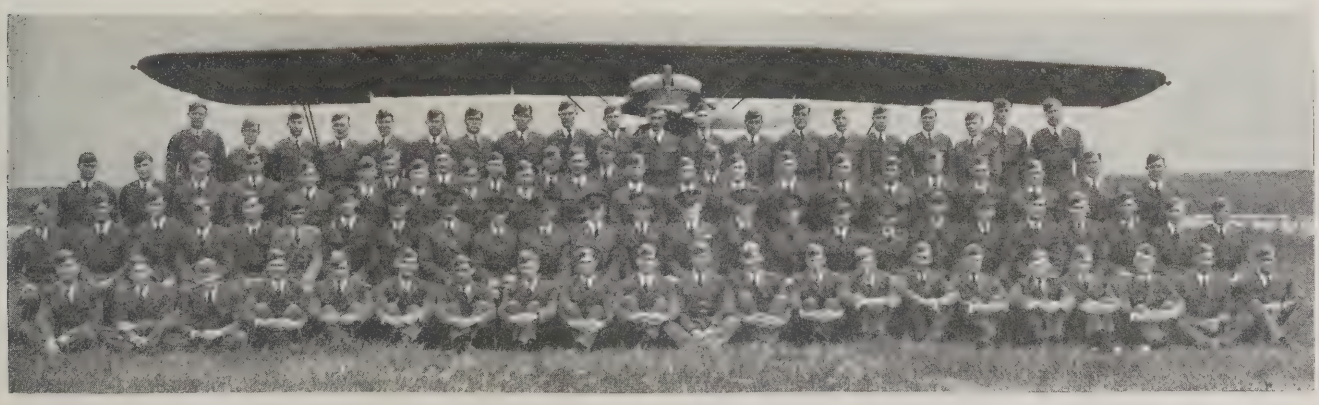
General laughter followed this statement and Mr. Stout paused to laugh with the more than 200 of the leading aeronautical engineers of the country in attendance at the conference. "Sound's funny, doesn't it?" he quered, "but it is all entirely within the range of possibility if and when aeronautical engineers stop building planes like they always have been built before.

"Anybody can build a plane that will fly. What I want to see is a man who has the nerve to build a plane that won't fly and then keep eternally after it until he makes it fly twice as successfully as any plane has ever flown before."

Grover Loening, of New York, head of the company that bears his name and builder of the famous Loening plane, challenged Mr. Stout's attack on "gadgets."

"The future of aviation," he said, "is not toward simpler airplanes if by this term is meant the discarding of those devices designed to make aviation safer and more comfortable. These things are absolutely necessary to the industry. No one will question the statement that brakes and starters have greatly aided aviation, and still they might fall under the classification of 'gadgets.' "

The aviation industry has suffered



Above are shown the members of the graduating class of the Air Corps Advanced Flying School, Kelly Field, Texas, June 21, 1930. Top row standing, left to right: Wagner, Kreysler, Bonnell, Wright, Taylor, Rodieck, Crew, Fisk, Fahring, Pincomb, Kruse, Waterman, Neednam, Fairchild, Wilgus, Fleming, Orr, Grow, Meecham; second row, standing: .Clements, Gibbons, Waitkus, Hunt, Wait, Grasty, Duncan, Van Cott, Kelly, Thornton, Smith, E. L., Sailor, Miller, C. H., Doolittle, Fay, Dunbar, Toulmin, Poppen, Going, Munson, Young, Pierson, Broeren, Bostrom, Brignall, O'Daniels, Humphreys; third row, kneeling: Merrifield, Anderson, J. A., Sandow, Britton, Recknagel, St. Sgt. Beach, Lt. Kuter, Lt. DeArmond, Lt. Spivey, Lt. Tally, Lt. Sams, Lt. O'Keefe, Lt. Wienecke, Lt. White, Lt. Ritchie, Lt. Briggs, Lt. Easton, Lt. Laubach, Lt. Egan, Lt. Dice, Smart, Jacobs, Carter, McGlin, Blakeney; fourth row, sitting: Maxwell, Hixson, Smith, C. E., Mosher, White, Kratz, Byrne, Shuttles, Oakes, Freeborn, Kiessig, Johnson, Carlisle, Baker, Anderson, J. S., Sherwood, Lidster, Miller, L. J. Hatch and Sykes. (Air Corps photo.)

more from slogans than any other industry in the world, Mr. Loening said. "I sometimes think," he said, "that 'air-minded' must mean nothing but air from the eyebrows up."

Two of the chief need's of aviation today, he said, are silencers for propellers and engine and variable pitched propellers.

"We must educate the public away from the idea that there is something heroic about flying," Mr. Loening said. "We must make the people really interested in aviation —so interested and accustomed to it that they take flying as a matter of course."

Mr. Loening closed with the suggestion that the N. A. C. A. laboratories spend less time and money in the testing of model airplanes in wind tunnels and more in actual flying tests.

Among the other suggestions made at the conference were that the N. A. C. A. conduct experiments with the pusher type of propeller, continue experiments with the floating aileron which has been demonstrated to be a greater factor for safety in preventing spinning, experiment with changes in the shapes of fuselage and study new type windshields.

A. E. Larson, of Pitcairn Aircraft, Inc., which company has been making extensive experiments with the autogyro type of plane, stated that this development was still "upon the bottle" but that the future looked bright and "we believe something really worthwhile is just around the corner."

Two of the outstanding exhibits in the N. A. C. A. laboratories, on a tour of which the engineers in attendance spent the entire moring, were the device for preventing the collection of ice on planes in flight and the demonstration of the "floating aileron."

The "floating aileron," as its name implies, swings free while the plane is in flight and is declared to be a great factor in preventing spinning. In tests put on for the benefit of the engineers, a small model airplane was put into a spin in a wind tunnel. With locked ailerons the ship continued to spin but when the ailerons were released the spinning motion ceased.

The ice clearing device, invented by Dr. William C. Geer, consists of a sort of rubber "overshoe" treated with a special oil which is slipped over the forward edge of the wings where ice forms first. From time to time the pilot of the plane, by forcing copressed air under this "overshoe," causes it to expand, breaking loose from the plane the ice that has formed. The motion of the plane through the air carries the ice away.

Firestone Ship Visits the Apple Blossom Festival

Pilot S. R. McDonald of the Firestone Tire & Rubber Company was a visitor at Winchester, Va., during the annual Apple Blossom festival held in that city. The event is held to celebrate the first appearance of the apple blossoms that are famous throughout that particular section of

The Firestone plane that visited The Apple Blossom Festival

the Shenandoah Valley. Mr. McDonald's trip was for pleasure as well as business. Later he hopped over to Martinsburg, W. Va. twenty miles away to attend the opening of a Firestone unit in that city.

Mr. McDonadl's regular duties are to assist in advertising the Firestone products. His tri-motor Ford is equipped with lavatory, plush covered seats, dome and wall lights, lounge, etc., and is "dolled up" in very attractive colors.

Thomas A. Batson has been appointed employment director for the Universal Aviation Schools succeeding Glen Ogle, resigned. Mr. Batson was formerly connected with the Universal Schools at St. Paul, Memphis and Chicago as sales manager. At the time of his appointment he was assistant registrar for Universal Aviation Schools. His headquarters will be in St. Louis.

Twenty-five army planes took part in the Cuban Independence Day celebration May 20 at Miami. Seventeen of the planes were from the Galveston, Texas, attack group and eight were from Bolling Field, Washington, D. C. The squadron was commanded by Major Johnson, famous war flyer.

1931 Airport Conference Awarded to Tulsa

The third annual National Airport Conference of the Aeronautical Chamber of Commerce will be held in Tulsa next year, it was definitely decided during the second annual convention held in Buffalo, May 14, 15 and 16.

Charles W. Short, Jr., manager of the Tulsa Municipal Airport, who was recently named permanent chairman of the South-Central division of the airport section, Aeronautical Chamber of Commerce, attended the Buffalo conference and it was largely through his efforts that the next airport convention was awarded to Tulsa. Mr. Short read before the meeting a paper on "Traffic Regulations," urging that Federal control be exercised over all movements of aircraft in the interest of efficiency and safety.

Curtiss-Wright Record at Memphis Base

Curtiss-Wright Flying Service of Memphis, Tenn., hung up quite a record recently when five of its students soloed after five hours or less instruction, a speedy record compared to the ten hours instruction which used to be considered the average length of time a student required before making his initial solo flight. The students, instructed by Capt. Vernon C. Omlie and K. E. Yoder, were Sam Goldfarb and J. O. McLin, of Memphis; J. H. Brown of North Carolina; E. F. Wiley of Hernando, Miss. and Lacey Jones, Newport, Ark.

Second Reduction on Arrow Line

A second reduction in prices this season on the Arrow Sport line is announced by the Arrow Aircraft & Motors corporation. The Arrow Sport Pursuit (Kinner) is reduced from $3,995 to $3,500; Arrow Sport Ninety (Lambert R-266) from $3,500 to $3,250; and Arrow Sport Trainer (LeBlond 60) from $3,131 to $2,700.

Maj. J. Carroll Cone, sales director for the American Eagle Aircraft Corporation, has delivered a new four-place American Eagle cabin monoplane to the American Bakery Company at Little Rock, Ark. The plane is a special custom built craft, finished in white and gold.

Year's Work of N. A. A. San Antonio Chapter

NEARLY a score of projects mapped out to be accomplished by the San Antonio Chapter of the National Aeronautic Association the past year have either been completed or are successfully launched, it was revealed in the annual report submitted by E. A. Feille, who recently retired as president of the organization.

The following projects were included on the year's calendar of events:

Conducted the San Antonio leg of the Gardner Trophy Race.

Kept alert eye on all proposed legislation or regulation which might work to the detriment of San Antonio.

Was active and led the fight on to Washington, D. C., in June, for the southern transcontinental air mail route, and after months of work and constant discussion received definite assurance that San Antonio would be named on this important air route.

Worked out a program with the Missouri Pacific Lines for the marking of roofs of railroad stations for the guidance of pilots.

Led active fight for the designation of San Antonio as international port of entry.

Intensified interest in aviation by creation of aviation committees in other organizations to aid local N. A. A. chapter.

Conducted radio programs once each week throughout the year for the dissemination of aviation news.

Entertained Turkish Air Misson to San Antonio.

Acted as expert counsellor to Boy Scouts seeking merit badges in aviation.

Assisted in Mexico City-Kansas City air derby.

Actively sponsored closer friendly relations with Mexico in establishing air lines via Eagle Pass, Laredo and Brownsville.

Sponsored two chapters of Junior Aero Clubs in two San Antonio high schools.

Cemented closer relations between Air Corps personnel and civilians in San Antonio by means of better contacts, and in inaugurating a ceremony honoring Kelly Field graduates, which will be an annual affair.

Sponsored dedication ceremonies to be held at Randolph Field June 20 and 21.

Consistently worked for a larger and more adequate municipal airport at Winburn Field, which would include more hangars and an administration building.

Conducted addresses before civic bodies seeking closer cooperation between all organizations in San Antonio for the promotion of aeronautics.

Worked hand in hand with the Chamber of Commerce and Junior Chamber of Commerce in encouraging all worthy air enterprises, and fighting all unscrupulous and doubtful promotion schemes.

Worked in close harmony with the national body in the upbuilding of the nation's resources for a national defence, and by creating air-mindedness among the citizenship of the country.

James F. Hamilton, president of American Airways, Inc., has resigned, it was announced recently by The Aviation Corporation, and Frederic G. Coburn, president of The Aviation Corporation was elected to succeed him.

Bemis Glider Club of Jackson, Tenn., has bought a new monoplane type glider from the Cessna Aircraft Company and taken an option on an adjacent field with the expectation of expanding their activities.

One of the big six-passenger Fairchild cabin monoplanes now in operation on the Interstate Airlines day shuttle route between Nashville and Atlanta daily is shown in the photograph. Although no passengers have been carried on the Interstate routes since early in January of this year, it is hoped by officials that regular passenger transport service may be offered within the near future along their entire system between Chicago and Atlanta and Evansville, Ind., and St. Louis. Interstate now operates a night mail route over their 1,660 miles of air lines, and an additional 422 miles daily on the shuttle mail line. Three-place "Hornet" powered cabin Stearman light transports are in operation on the night mail routes.

Federal Authority Required for Transport Operation

THE Department of Commerce has recently prepared and promulgated a supplement to the Air Commerce Regulations requiring the operators of scheduled air passenger transport services in interstate commerce, to obtain from the Secretary of Commerce a certificate of authority to operate such a service.

The addition to the Air Commerce Regulations is primarily for the purpose of surrounding air lines engaged in scheduled transportation of passengers in interstate commerce with all possible safeguards and of providing air transportation with practically the same uniformity of operation as is now enjoyed by railroads and steamship systems.

In making an announcement of this supplement to the regulations, Major Clarence M. Young, Assistant Secretary of Commerce for Aeronautics, said:

"The Certificate of Authority will be issued only to those operators who effect complete compliance with the new regulations and the interpretations thereunder. When placed in full operation and effect, these regulations, which constitute a standard or code of minimum requirements, governing the operation of scheduled interstate air passenger routes, are expected to bring about unprecedented records of safety and reliability in this phase of civil aeronautics.

"These regulations were effective at midnight May 15, 1930 and on or before July 15, sixty days later, applications for the Certificate of Authority shall be filed by the operators with the Department of Commerce. Upon receipt of the application, the Department of Commerce may issue a temporary Letter of Authority to operators, pending inspection of the route by the Department of Commerce inspectors.

"The fundamental principles involved in the requirements have the endorsement of the majority of air transport operators in the United States. A thorough study of the subject was made by operators at a series of meeting."

W. B. Hurlburt and R. B.C. Noorduyn have recently been elected vice-presidents of the Bellanca Aircraft Corporation. Mr. Hurlburt will be in charge of sales in the metropolitan district of New York, maintaining offices at 405 Lexington Avenue in the Chrysler building.

Now They Say "I Do," 15,000 Feet Up

By J. W. Goostree

THE zero hour arrived. A great six-place Fairchild cabin plane hovered 15,000 feet above the earth. Gene Fricks, veteran air mail pilot, winked at an amazed Cupid who stood in the doorway of his cumulus castle, fixing an arrow to his bow string.

Two people turned in their seats midway of the six-place cabin and faced a nervous minister—Rev. John F. Baggett, of Murfreesboro, Tenn.

"We're ready," they said in unison.

The familiar "do you's" and "I do's" were asked and answered. Cupid lowered an empty bow and reentered his cloud castle. Gene Fricks started a long circled decent that carried the big Fairchild down over Murfreesboro to Sky Harbor.

Mr. and Mrs. Carroll Baker stepped from the plane smiling. They had broken an aviation record. They had been married 15,000 feet above the earth.

"Although this was not the only wedding of its kind it was the first one to be performed at such a high altitude," Mrs. Baker told a reporter for SOUTHERN AVIATION, "We were thrilled, of course. Each anniversary we plan to increase the altitude by five thousand feet until we get as high as we possibly can."

"We have our own plane and fly often. We are especially interested in sky-writing. When we are both flying, some time, in different planes, we will be able to say in sky-writing, "I love you."

Could she fly a plane?

"No, but we hope it won't be long before I can pilot myself. Can you think of anything nicer?"

The other half of the nuptial event, Carroll Baker, an enthusiastic student of aviation and licensed pilot of Hopkinsville, Ky., commercial flyer and organizer of the Student's Aviation Club of his home city, beamed on his beautiful bride and with usual aviator's stocism, said nothing.

After a weddng party at Sky Harbor's clubhouse, Mrs. Margaret (Adams) Baker and her new copartner for life, amid showers of rice and well wishes, climbed into their plane and headed toward Hopkinsville and the future.

A Wright Whirlwind played the wedding march for this couple 15,000 feet above Tennessee's Sky Harbor.

Minimum Height 1000 Feet Over Explosive Areas

Flying over high explosive danger areas, certified as air space reservations, in accordance with the recent announcement of the Department of Commerce, will be restricted to a minimum altitude of 1,000 feet under an amendment to the Air Commerce Regulations announced by Clarence M. Young, assistant Secretary of Commerce for Aeronautics.

The amendment reads: "Exclusive of taking off from or landing on an established landing field, airport or on property designated for that purpose by the owner, and except as otherwise permitted by Section 79, aircraft shall not be flown over certified high explosive danger areas except at a height sufficient to permit of a reasonably safe emergency landing outside of the certified danger area, whch in no case shall be less than one thousand feet.

Nashville Hotel Has Pilot's Room

When aviators chance to fly by way of Nashville, Tenn., they need not want for a more cordial welcome than is offered them by one of the city's most air-minded citizens, Manager Howard Baughman of the Hermitage hotel.

A few months ago, when Tennessee's Sky Harbor, Nashville's air mail stop, was officially opened to the air traveling public, Manager Baughman established a Pilot's Room on the mezzanine floor of his downtown hotel. Officials of Interstate Airlines, Inc., operators and owners of Sky Harbor airport, provided the hotel management with pictures of their air mail pilots and scenes of their airport and various types of planes, which when hung in the room, which is a fairly large one, gave it an atmosphere of beauty and comfort combined.

Today when pilots land at the Sky Harbor terminal, the Hermitage Pilots' Room is spoken of with pride, and if the air traveler and his passengers desire to remain overnight they are offered the choice of either remaining at the Spanish clubhouse at Sky Harbor, which has several sleeping rooms, or it is suggested that they go to the Hermitage where they will find the pilot's lounge, reading room and a quiet place to spend an evening, if they so choose.

W. B. Kinner Resigns as Company President

Announcement was made recently by the Kinner Airplane and Motor Corporation of the resignation of its president, W. B. Kinner. He was succeeded by Robert Porter, general manager and chairman of the board of directors for the past year.

The Baltimore School of Aeronautics, of Baltimore, Md. has been appointed distributor for the Fleet airplane manufactured by the Fleet Aircraft, Inc., of Buffalo, N. Y., according to an announcement of E. F. Cummings vice-president of the organization. Mr. Cummings also announced that the institution had established a new branch of service, to be known as the "Flying School Branch." This will extend the services of the institution considerably and place it in a position to give complete facilities for the servicing of many types of planes in addition to regular passenger planes.

An Airplane Eagle Hunt Over Texas Ranches

USING a swift training plane to "beat the birds at their own game," a Texas flier and an expert marksman recently annihilated in a few hours a flock of eagles which for a year or more had menaced sheep in the El Paso district. The eagles, some of them with a wing spread of nine feet, had evidently selected the sheep ranches near El Paso as a choice spot for their predatory activities.

Shotguns fired by watchmen were long ago proved worthless, as the eagles, guided by unerring instinct, seemed to know how to keep out of range of such weapons. The situation had become serious, and the sheep growers were at their wits' end.

Recently the depredations of the eagles became worse than ever. In desperation Leroy Cleveland, a rancher tried every method he could think of to get rid of the birds, but without success. One day he happened to be in El Paso and mentioned his trouble to R. P. Langford, manager of the R. and L. Airways, and Clarence E. Robey, pilot and instructor for the flying school. They suggested that he try shooting them from an airplane.

Cleveland was a trifle skeptical, but finally decided to try the plan.

"I've experimented in every way I can think of to kill those birds and haven't succeeded so far. If you boys think you can do it, I'm willing to spend $2,000 letting you try."

The next question was the type of plane best suited for the purpose. It was finally decided that the Consolidated Fleet, used for training students, would be the best. Powered with a Warner Scarab motor the little biplane proved it knew more tricks than all the birds in West Texas.

Bernhardt, an El Paso motorcycle patrolman, was selected to do the shooting because of his ability to fire accurately from any position. An automatic shotgun, using heavy buckshot, was the weapon decided upon.

Early the next morning Robey and Bernhardt circled over the ranch for nearly an hour, flying at an altitude of more than 10,000 feet.

Soon they saw an eagle circling lazily a few hundred feet below them and about a quarter of a mile away. Robey turned the plane toward the bird to bring it within shooting range. Just as Bernhardt was about to shoot, the bird as suddenly began to drop. Putting the plane into a power dive, the men and bird raced downward for thousands of feet, circling and swerving, the eagle with its eye on its prey, the men watching the eagle. When the bird had come within a few hundred feet of the ground it stopped in its headlong drop. Robey jerked back on the stick and as he leveled off there were three quick reports from Bernhardt's gun. The eagle dropped dead.

Sometimes the program was varied, but with all the same result—a dead eagle. Not one bird thus sighted escaped. At the end of eight hours of hard and fast flying nine birds had been killed.

"You fellows have done in a day what I've been trying to do for a year," Cleveland told Robey and Bernhardt when they started back to El Paso. "Hiring you men and your plane is the cheapest way I know of to get rid of those sheep killers."

The eagles were of gigantic size. The smallest had a wing spread of six feet and the largest nine feet. Talons on the birds measured as long as four inches.

One of the killers that succumbed to the deadly aim of a Texas marksman during the aerial eagle hunt

Baltimore Branch for Parks Air College

A Baltimore, Md., branch of the Parks Air College, of East St. Louis, Ill., will be established, according to an announcement of officials of the institution. P. N. Hewitt, regional sales manager of the school, in making the announcement, said branches of the school were being established in many large cities of the country. A branch is being established in Washington, D. C., and one in Philadelphia.

Alfred W. Gieske, Jr. well known in local aviation circles as a pilot and airport operator, will be director of the school, according to the announcement. It is planned to open local offices at 1307 North Charles Street.

Kenneth C. Hawkins divisional operations manager for NYRBA, arrived in Miami recently from Port of Spain, Trinidad, where he delivered a new 20-passenger Consolidated Commodore to be used on the South American division of the airways. Mr. Hawkins remained in Miami several days before going to Buffalo, N. Y. where he visited the factory of the Consolidated Aircraft Corporation and took delivery on a new seaplane to be flown to Miami.

The American Eagle Aircraft Corporation announces the aeronautics branch of the Department of Commerce has approved the air wheel equipment for the Model 201 Kinner powered biplane which is manufactured under approved type certificate No. 293.

American Airways Place Big Stanavo Order

The largest single order for lubricating oil placed thus far in the field of commercial aeronautics was recently placed by the American Airways, when they purchased 100,000 gallons of Stanavo aviation engine oil for delivery within the next twelve months.

The sale to the American Airways was negotiated by the Standard Oil Company of New Jersey which, together with the Standard Oil Company of California and the Standard Oil Company of Indiana, organized and maintains the Stanavo Specification Board, a technical corporation designed to develop uniform petroleum products for aircraft use. Stanavo Aviation Engine Oil was formally introduced to the industry at the Cleveland races in September 1929 and is now distributed throughout the United States. It is now marketed by eleven oil companies in addition to the three member companies of the Stanavo Board.

MIAMI PILOTS BUILD OWN GOLF COURSE

ABOVE is shown the miniature golf course constructed by pilots at the marine base of the Curtiss-Wright Flying Service, on Biscayne Boulevard, Miami. The course covers an odd-shaped parcel of land occupying a space about 50 by 40 feet. It is a 9-hole course and was constructed entirely by the pilots. Dues at the rate of $10.00 per year are charged and the club now has a membership of more than twenty. The course is open to members of the Curtiss-Wright Pilot's Golf Club only, and was built to provide amusement for the pilots between flights.

Broadcasting Record Broken on Yancey's Plane

Captain Lewis A. Yancey arrived at Pan American Airport, Miami, on May 15, in the specially built Radio Pilot Plane accompanied by Zeh Bouck, engineer of the Pilot Radio Tube Company, Brooklyn, and Emile Burgin, co-pilot. Their itinerary was for a South American goodwill flight to Havana thence circling the West Coast and Rio de Janeiro to Buenos Aires, with the trip scheduled to terminate July 1. Upon arrival Yancey announced that all records for short wave radio broadcasting had been broken enroute to Miami. Bouck, radio operator, who maintains a complete broadcasting apparatus aboard the plane, carried on a conversation with New York when the ship was over Jupiter, Florida, 1100 miles from New York.

Zeh Bouck, radio operator of the Pilot Radio Plane, broke all radio short wave broadcasting records when he conversed with New York from Jupiter, Fla., 1100 miles away, while in the air. Bouck is one of Yancey's crew which is making a goodwill trip into South America by plane.

Miami Ordinance Regulates Airplane Operation

An ordinance providing regulations for licensing of pilots and airplanes operating from airports within the city was passed by the city commission recently. The ordinance follows recommendations of the department of commerce and carries indorsement of municipal aviation officials and advisors.

Oklahoman Will Attempt Round-Trip Ocean Hop

W. B. Bottenfield, Tulsa pilot and former manager of the Garland aviation interests at Tulsa, Okla., is completing plans for a proposed New York-to-Paris flight and a Paris-to-New York flight. He hopes to take off from New York on the first of the two ocean jumps some time in June. A special Lockheed ship is now nearing completion in the California factory, and when it is finished will be flown to Tulsa by Mr. Bottenfield, who will also test the ship at Tulsa before proceeding eastward for the initial hop across the Atlantic.

Coincident with Bottenfield's resignation from the Garland company for the flight, it was announced that C. W. (Bill) Bennett had been made manager of the Garland interests. Bennett was formerly manager of the Billie Burke airport at Okmulgee, has had considerable experience in aviation and is well known in aeronautical circles of the South and Southwest.

The International Airports Corporation, 25 Broadway, New York City, has just signed a contract with the Easton Airport Corporation, for construction of a major commercial airport at Easton, Pennsyvania.

Ultimate expenditure exceeding one-half million dollars will be made in the complete development of this airport, which is to serve the district of Easton, Pennsylvania and nearby cities and communities. Work is to start immediately.

The International Airports Corporation will also act as operating managers of the airport over a period of years.

Finley Henderson, an experienced pilot from the West Coast, has located in Siloam Springs, Arkansas, where he is president of the Ozark Flying Service, Inc., and distributor of the American Eagle.

The Dedication of Randolph Field

(*Continued from page* 22)

Eleven San Antonio architects have received contracts to design buildings that will cost almost three million dollars. All buildings will be of masonry, and a modern development of Spanish type of architecture. The administration building will be the one tall building on the square and will house, aside from offices, the water supply and serve as a base for the strong aerial beacon.

At the present time the flying training of the Army Air Corps is divided among three fields—March Field, near Riverside, Calif., and Brooks and Kelly Fields, both near San Antonio.

The basic idea underlying the establishment of Randolph Field was to concentrate all flying training at one point. However, the handling of upward of 300 student-manned airplanes from one field, and at the same time, is a problem in air traffic that can hardly be solved on paper. For that reason, only two units of Randolph Field are being constructed at the present time. These two units will comprise all of the primary flying training now conducted at March Field and Brooks Field. After this much is in full operation, it can be determined whether or not there is "air room" for the additional unit—the advanced training now being carried on at Kelly Field.

This huge air academy has been designed with a view to making it a spot of beauty as well the world's greatest flying school.

The field is a tribute to Captain William M. Randolph, adjutant of Kelly Field. He met his death in a crash, September 17, 1928, while on a cross country flight, when his plane slipped from a bank at 300 feet altitude.

The field is the realization of a dream and plan of Brigadier General Frank P. Lahm, commanding the Air Corps Training Center, which will be moved to Randolph Field. His address during the dedication ceremonies will be on the "Mission of Randolph Field."

Dedication ceremonies will take place at 10 o'clock on the morning of the 20th. The program will include addresses by national figures and will be comparatively short, giving time to the aerial exhibit which will take place over the field. Over 200 military planes from Brooks and Kelly Fields, Fort Crockett and Fort Sill will be in the air at one time, flying in formation and performing various maneuvers.

On the morning of the 21st, the June class will be graduated from Kelly Field and special maneuvers are being planned for the members of that class. One hundred planes will take part in the exhibit and the program will include arcrobatics, balloon strafing , dropping of machine guns and personnel by parachutes, formation flying, and individual combat.

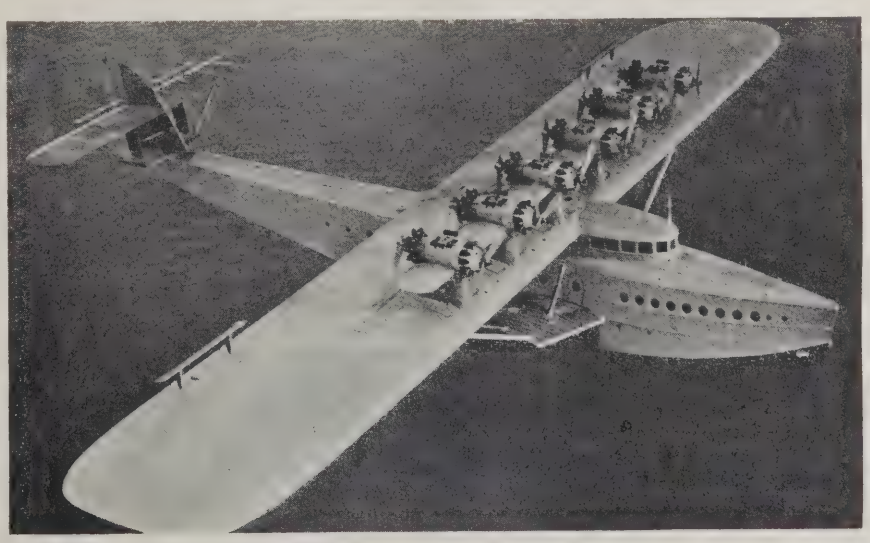
The presentation of wings, certificates, and commissions at the services in the assembly hall will conclude the morning's events. A large aviation ball to be held in the municipal auditorium will be the final event of the celebration.

Baltimore Airport Officials Test "Blue Law"

A boost to aviation has been given Batimore, Md., by bringing it before the public through the recent arrest, under Maryland's old Sunday "blue law," of four officials of three flying fields. The Sunday following the arrests more than 20,000 persons gathered at the various airports, and it is expected that similar and possibly larger crowds will visit the flying fields until, at least, the test cases now pending are disposed of. In each arrest the charge was "commercializing the Sabbath by carrying passengers for hire." The arrests were made by county authorities, as the flying fields are located outside the city.

Those arrested were Lieutenant Lee H. Dice, operations manager, Curtiss-Wright Flying Service, Logan Field; J. Wilbur Mullen traffic manager, Curtiss-Wright Flying Service, Logan Field; Edward Handler, president of the Baltimore Airways, Inc., operators of Handler Field, Park Heights Avenue, and Warrington C. Moss, Jr., manager of the Green Spring Valley of the Berliner-Joyce Aircraft Corporation, of Baltimore.

Mr. Moss was the only one brought to trial before a magistrate, was found guilty and fined $5 and costs. After paying the fine, Mr. Moss announced his intention of filing an appeal and making a test case.



THE accompanying photograph shows the 12-motored DO-X in flight. The huge German flying boat is being primed for a transatlantic crossing in July. The 12 six hundred horsepower Curtiss Conquerer motors have been installed especially for the transatlantic flight. In a trial flight over Lake Constance 169 passengers were carried aloft. An increase of 2,400 horsepower is provided through installation of the American motors. The ship has a wing span of 162 feet and its hull is 152 feet long. On the first leg of the transatlantic hop the DO-X will carry approximately 40,800 lbs.

Aerial Adventures

(*Continued from page* 15)

served us real port wine, and when I say port wine, I don't mean the bootleg stuff you get in this country now. It had come out of cobwebby cellars after years of hiding, and as the observer and I winked at each other over tall bottles of it, I thought I had never tasted anything quite so good. Perhaps the rotten weather and the dousing we got when we eased down into the Humber had something to do with it, but I'll never forget that wine.

Finally the station ordered the plane towed in, and an inspection showed we had nothing worse than a burned engine bed, scorched cowling and a few minor troubles of this sort. I had caught fire in the best possible place to catch fire—at the beginning of the trip, and had come down in the best possible place to come down—alongside a boat-load of perfect hosts.

Doubtless you would be more interested in the war game in the north of England, as I saw it from Killingsholme. This phase of the big world scrap is rarely, if ever, mentioned. This may be because there was nothing exciting about it—just flying in the worst weather in the world and keeping an eye out for stray U-boats.

Now and again the Heinies would drift down our way after waking up Hull with a few tons of explosives. Then they would give us a few stern reminders that they had not forgotten us, but they never did us serious damage.

Of course, the "Zeps" usually called around at night, and only on those nights when the atmospheric conditions were right to conceal them from our eyes. I remember my first experience distinctly. Suddenly the word was passed around, "All lights out!", then orders were issued to scatter and "hug the ground." That was so we wouldn't be struck by flying debris, and the separation order was so not as many of us would get hit as we would in a huddle.

It was a weird sensation, lying there stretched out on the ground and hearing the humming of unseen motors some 10,000 feet above us. Ghostly! It was also a helpless feeling, just waiting for the worst to happen and hoping it wouldn't be as it looked like it was going to be.

Searchlights winnowed the air at irregular intervals, searching for the marauder, but they couldn't pierce the blanket of mist more than 500 or 600 feet up.

Then came a ghostly whistle, gathering in shrillness and concluded by a "ker-boom!" as the "calling card" struck. Then another and another. They sounded to me like they were hitting right on top of us. Next morning, however, when the damage was surveyed, we found there was none. The closest shell had struck an eighth of a mile from the station. But from Hull came reports that a dock had been done for, and two or three civilians killed.

As for casualties at our station, there were none during the ten months I was attached to it, insofar as the enemy had anything to do with it. Five of our boys had been killed in crashes during this period, however, and strange to say, all occurred in Humber River. There were none in the North Sea. where we expected them. There was one forced landing out at sea, and even this was fortunate because, although the plane sat down in a mine field, the pilot and observer happened to be picked up, after six days, by a British destroyer which, as luck would have it, was taking a short cut through the edge of the field, and so happened to sight the disabled ship and its helpless crew.

Nothing exciting to keep us interested—but during the ten months our boys were attached to the station, there was only one ship in the North Sea successfully attacked by a U-boat. It was a lumber vessel and I still remember the lumber floating for miles around the place where it was torpedoed.

I took part in only one bombing and I am not so sure the submarine we attacked was damaged, but then it wasn't so much the damaging of the U-boat that counted. It was keeping them scared off.

Car Distributor Uses Airplane

(*Continued from page* 11)

sippi. He was convinced early of the destiny of the airplane for commercial usefulness, proof of which he was experiencing in his own business, and it was he who led the campaign for a municipal airport in Jackson.

When the city was reluctant to buy a tract for a municipal field he took an option on a large tract known as Davis Stock Farm adjacent to the city limits and held it until the people of Jackson were convinced of the need for a municipal field.

In recognition of his pioneering efforts in establishing aviation in central Mississippi, he recently has been chosen Mississippi Governor for the National Aeronautical Association.

Before the city took over the municipal airport, he organized the Mississippi Airways, Inc., and placed Lieutenant Ranney, a graduate of Kelly Field, in charge. When the city took over the airport, Mr. Sellers turned Lieutenant Ranney over to them as manager of the field and he is still in charge as airport manager. Largely through his efforts, the city of Jackson is now the hub of two air passenger lines, one from St. Louis to New Orleans and the other from Birmingham west to Dallas and connecting points in the Southwest.

Mr. Sellers has been a constant worker for airports and air markings in the small towns of Mississippi. When his aid is needed, and he is called often, he hops in his plane and flies to the city, assisting in putting on an aerial attraction for the crowd and giving aviation committees the benefit of his twelve years experience. Just recently he cooperated with the American Legion in a "mark your town" campaign, bringing the need for such markings to the attention of the people by flying over many towns and throwing out posters with a printed request for their cooperation.

Latest Developments in AIRPLANES AND ACCESSORIES

Laird Announces New Speedwing Senior

THE new Laird Speedwing Senior was exhibited for the first time at the Detroit Aircraft Show by the E. M. Laird Airplane Company of Chicago.

Preliminary tests of this new plane indicate a speed of better than 200 miles per hour, when the ship is fitted as a single seater (passenger cock-pit completely covered). In recent flight tests, as a two and three seater, a maximum speed of 186 m. p.h. has been attained, and a cruising speed of 165 m.p.h. at 1750 r. p.m. The climb for the first minute from a standing start is 2500 feet.

The Speedwing Senior is a development of the regular Speedwing model, powered with the 450 h.p. Wasp. It is customized throughout —equipped with special instruments and fittings. Two quickly interchangeable covers are provided for the 2-passenger cockpit, forward of the pilot's seat. One of these carriers a windshield designed to give maximum protection without breaking the stream-line of the fuselage. The other closes the cockpit completely, reducing parasitic resistance even further.

Two spacious luggage compartments, and many conveniences for pilot and passengers, placed the Speedwing Senior among the smartest at the exhibition.

The new Speedwing Senior has been designated model LC-RW 450. Specifications are as follows:

Type: Three place open land biplane.

Power plant: Pratt and Whitney Wasp, rated 450 h.p.

Dimensions: Span, upper wing, 30 ft. 6 in. Span, lower wing, 25 ft. Chord4 in. Chord, upper wing, 4 ft. 6 in. Chord, lower wing, 4 ft. Length overall, 22 ft. 8 in. Height overall, 9 ft. 6 in. Wheel tread, 6 ft. 8 in.

Area: Total wing area, 216 sq. ft.

Weight: Empty, 2120 lbs. Fuel load, 690 lbs. Total useful load, 1080 lbs. Pilot, 170 lbs. Gross weight, 3200. Fuel capacity, 105 gals. Oil capacity, 8 gals.

The new Wasp powered Laird Speedwing Senior

American Eagle to Feature Small Monoplane

American Eagle engineers convinced of the demand for a light sports-trainer plane in the $1,000 class, have designed a plane known as the American Eaglet, to be powered with a two-cylinder 25 horsepower engine, to be placed in production immediately.

E. E. Porterfield, president of the company, states that he believes as many as 500 of the light planes can be marketed in 1930, judging from the flood of letters that came to the company following the recent announcement of the intention of American Eagle to produce such a plane.

The feather weight Eaglet, Mr. Porterfield believes, will open a new sales field and permit a vast number of people who heretofore not been able to purchase more costly planes, or have held back because of the higher power of the larger ships, to fly.

The American Eaglet will be a one-place ship, with economy of operation unsurpassed.

Instrument Invented Warns of Fog Danger

While other meteorologists and aviation research specialists throughout the nation work to conquer completely that greatest hazard to the flier, a Tulsan is attacking fog from a new angle.

A. L. McCuistion, government airways and Safeway airlines meteorologist at the Tulsa, Oklahoma, Municipal Airport, has applied for a patent on an instrument which will warn the flier of the possibility of fog forming at his particular spot in time for him to take the necessary steps to insure his safety.

In addition, the instrument, to be known as a dew point indicator, will show the pilot the current air temperature, the saturation or dew point, and the amount of moisture present in the air.

From this information the pilot, with a little training, also will be able to determine how near conditions are to the danger point of ice forming on the wings. The instrument, described as composed of two dials and "wet" and "dry" bulbs, the latter to be installed in the wings, provides readings from which the flier makes his own calculations as to the situation.

One outstanding airline operator of Tulsa has looked upon the instrument with favor, predicting that in a comparatively short while every plane of any consequence will be equipped with this device. McCuisition states that an offer from an instrument manufacturing concern has already been received.

Ford Price Reductions

Reductions in the prices of all Ford tri-motored planes were announced recently by the Ford Motor Company. The 5-AT, powered by three Wasp engines, was reduced from $55,000 to $50,000. The 4-AT with Wright J-6 engines, the 9-AT with Wasp Junior engines, and the 11-AT with the newly developed Packard Diesel engines, were cut from $42,000 to $40,000. The price of the 7-AT was reduced from $51,000 to $48,000.

Two New Ford Models Are Announced

TWO new regular models of Ford all-metal tri-motor airplanes, one powered with three Packard Diesel radial air-cooled motors, the other with three of the new Pratt and Whitney Wasp Junior engines, are announced by the Ford Motor Company.

The plane powered by Packard Diesel engines will be known as Model 11-A. A similar plane powered with the new Wasp Junior engines has been undergoing rigorous tests on the Ford Motor Company's aerial freight services between Ford Airport, Dearborn, Michigan, and Cleveland, Buffalo and Chicago. This plane will be known as the 9-A.

The announcement was considered highly important as indicating that the engineers of the Ford Motor Company consider these new developments in aircraft power plants ready for service in air transport operations. The addition of the two to the five other Ford plane models gives the company a wide range of transport plane types. Other models are the 4-AT landplane powered with three Wright J-6 engines; the land and sea plane types of the 5-AT model, powered with Pratt and Whitney Wasp engines; the 6-AT seaplane powered with J-6s, and the 7-AT landplane powered with a center Wasp and two outboard engines of the J-6 type or the Wasp Junior type.

The dimensions of the two new models are the same. The span is 74 feet, the length 49 feet, 10 inches, the height 11 feet, 9 inches, and the tread 16 feet, 9 inches. The length of the cabin is 16 feet, 3 inches, the average width 4 feet, 6 inches, the average height 6 feet, giving a volume of 461 cubic feet. Otherwise the specifications of the two new models differ.

The new 9-A model will be similar in many respects to the present standard 4-AT model, which is powered with Wright J-6 engines. The three Wasp Junior engines, of 300 horsepower each, will drive the new 9-A model at a maximum speed of 130 miles per hour, a cruising speed of 107 miles per hour and give it a stalling speed of 57 miles per hour. Seats are provided for 11 passengers.

The new Diesel engines, rated at 225 horsepower, with fuel pumps set for economical operation, give the new 11-A model a total of 675 horsepower. While these are the lowest powered motors which are now standard equipment in Ford planes, they afford a radical economy in fuel and provide sufficient power for many purposes. This new model carries nine to eleven passengers at a cruising speed of 100 miles per hour and a high speed of 116 miles per hour. Its service ceiling is 14,000 feet and its stalling speed 55 miles per hour.

Ford 4-AT transport powered with three Packard Diesel engines

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Davis Aircraft Corporation, Richmond, Indiana, has placed in production a new Davis D-1 monoplane, powered with the LeBlond 85 horsepower, Model "66" engine, which sells for $3,585. This plane has a high speed of 115 miles per hour; landing speed of 58 m. p. h.; service ceiling, 12,000 ft.; and a cruising speed of 95 m. p. h. An approved type certificate is expected in the near future.

New Aircraft Carburetor Service Tool Kit

The Stromberg Motor Devices Company, carburetor manufacturers, now have available for distribution

Stromberg carburetor service kit

a complete set of tools for servicing their aircraft carburetors. This tool kit is adapted especially to the needs of both organizations giving service on Stromberg aircraft carburetors, and airways operators doing their own work on engines and accessories.

Special equipment, including line reamers, is provided for the removal and installation of throttle bushings. Special sockets and screw drivers to be used with a "snap on" handle, take care of such parts as needle valve seats, discharge nozzles, float fulcrum screws, etc.

Special screw drivers facilitate the removal of economizer discharge nozzles, mixture control nozzles, and other parts located at the end of drilled passages. All the taps and dies necessary for reconditioning threads are included in the set.

Remarkable Performance of 1000-Pound Plane

A. W. Mooney, airplane builder of Wichita, Kansas, in a tiny Kinner-powered monoplane of his own design, recently made a non-stop flight from Burbank, Calif., to Fort Wayne, Ind., on a projected non-stop transcontinental flight.

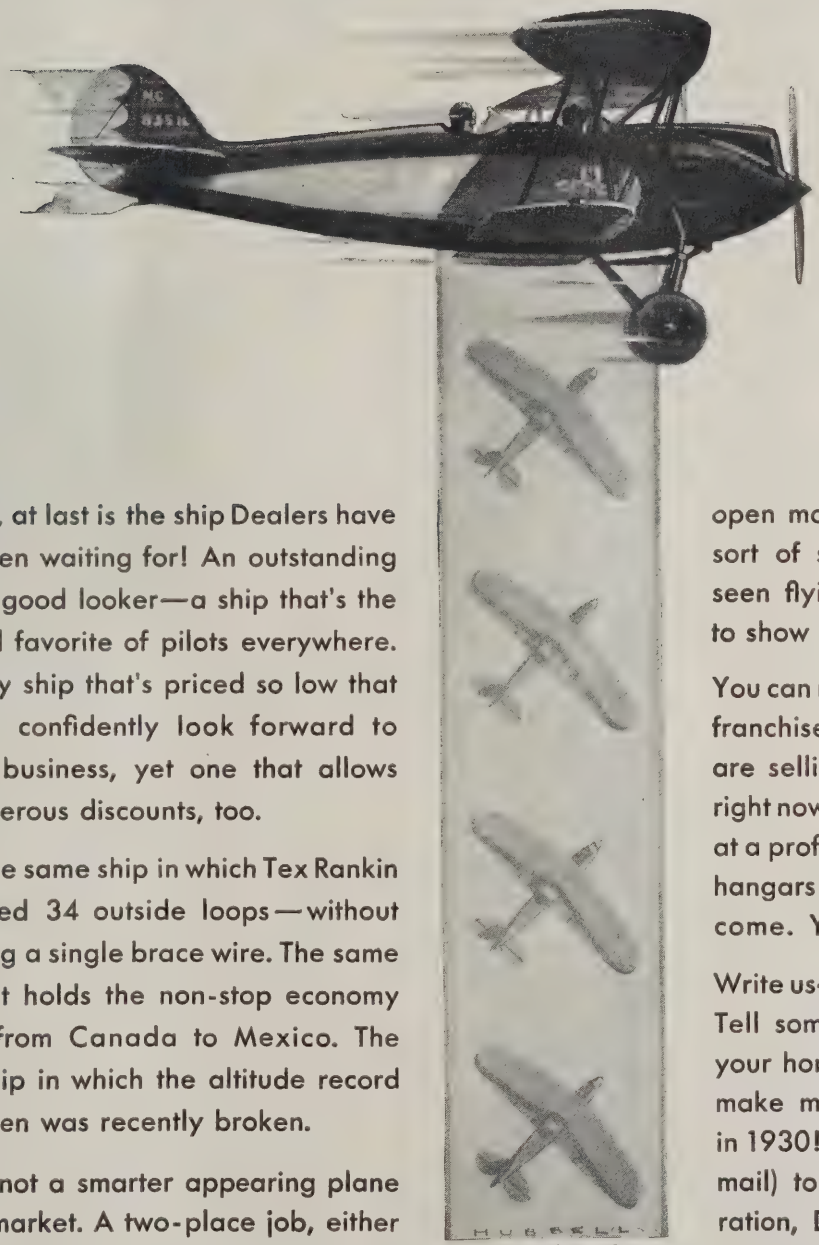
Mooney left Burbank at 6:43 a. m., passing over Wichita, Kans., shortly after midnight and landing at Fort Wayne, Ind., at 7:12 a. m., on account of failure of the gas pump, it is said. The 2100 mile trip was made in approximately 22 hours, with an average speed of better than 90 miles per hour and a total gas consumption of 136 gallons.

The performance of this little ship, which weighs only 1000 pounds, was considered remarkable in that it carried aloft in addition to Pilot Mooney, who weighs 150 pounds, 1000 pounds of gasoline.

American Eagle engineers are at work adapting two new engines to American Eagle biplanes. The new motors are the Brownback and American Cirrus, the former a radial and the latter an inverted in-line engine. These motors will be installed in the Model 201 American Eagle, a three place sports-trainer type ship.

At $3150

the GREAT LAKES SPORT-TRAINER should outsell all other ships!



HERE, at last is the ship Dealers have been waiting for! An outstanding flier—a good looker—a ship that's the personal favorite of pilots everywhere. A quality ship that's priced so low that you can confidently look forward to volume business, yet one that allows you generous discounts, too.

This is the same ship in which Tex Rankin performed 34 outside loops—without loosening a single brace wire. The same ship that holds the non-stop economy record from Canada to Mexico. The same ship in which the altitude record for women was recently broken.

There's not a smarter appearing plane on the market. A two-place job, either open model or convertible coupe. The sort of ship people are proud to be seen flying—the sort you'll be proud to show off to prospects.

You can make money with a Great Lakes franchise. Great Lakes Operator-Dealers are selling Great Lakes Sport-Trainers right now—they are running their schools at a profit—they are maintaining service hangars that bring them a steady income. You can do the same thing.

Write us—now. Tell all about your set-up. Tell something of flying conditions at your home field. Let's get together and make money for and with each other in 1930! Address your letter (send it air mail) to Great Lakes Aircraft Corporation, Division J-14, Cleveland, Ohio.

Manufactured under U.S. Department of Commerce Approved Type Certificate Number 228

GREAT LAKES AIRCRAFT CORPORATION CLEVELAND

Contractors to the United States Army and Navy

Certificate Awarded to Alexander Bullet

WHEN the Department of Commerce awarded Approved Type Certificate No. 318 to the Alexander Bullet on May 6, it became the first low wing cabin monoplane and the first cabin plane with retractable landing gear to win government approval. With notice that approval had been granted, the Alexander Aircraft Company announced that the price of the Bullet with the Wright J-6 165 h.p. motor had been reduced to $7200.

The Alexander Bullet is the result of more than a year of research. It was announced several months ago. The experimental model revealed bad spin characteristics while undergoing final tests and had to be redesigned. Chief among the changes in design are the lengthened fuselage and new tail surfaces. The cabin is larger and more roomy. Wing span is shorter and a high-lift air foil is used.

The Alexander Bullet is especially designed to meet the demands of commercial aviation for an economical airplane affording high speed and carrying capacity per horse power.

The Bullet embodies all the safety features peculiar to the low wing cabin plane. No heavy structural members are above the passengers and pilot. Wings near the ground contribute a low center of gravity, minimizing the possibility of a nose-over.

The atmosphere of comfort and security prevails throughout the cabin. Seats are well upholstered in genuine leather and tilted at an angle to allow the passengers the greatest ease. There is space between the sats to permit passage to and from the door which is toward the rear of the cabin. Walls and ceiling are covered with leather grained Fabrikoid. The floor is carpeted.

Preliminary study of various airplane types preparatory to designing the Bullet demonstrated that the low wing cantilever ship possessed many advantages.

Structurally, the low wing monoplane is lighter for the same carrying capacity and strength. Heavy diagonal bracing is eliminated. Pilot and passengers, gasoline, baggage and landing gear rest directly on the wing, producing no stresses in the fuselage structure. As all load is carried directly on the wing. there is practically no change in center of gravity with varied loads. the wings, being low, permit a higher speed range because the landing speed is decreased due to the ground effect.

Standard equipment of the Bullet includes a choice of retractable landing gear or the gear streamlined with fairing. It is pointed out that while the retractable gear adds several miles an hour to speed, many prospective purchasers have expressed a preferance for the streamlining.

Flying and landing lights are standard equiment. Fiying lights are ingeniously streamlined in the wing tips and fin. Landing lights are sunk in the leading edge of the wing.

Specifications and performance are given by the manufacturer as follows:

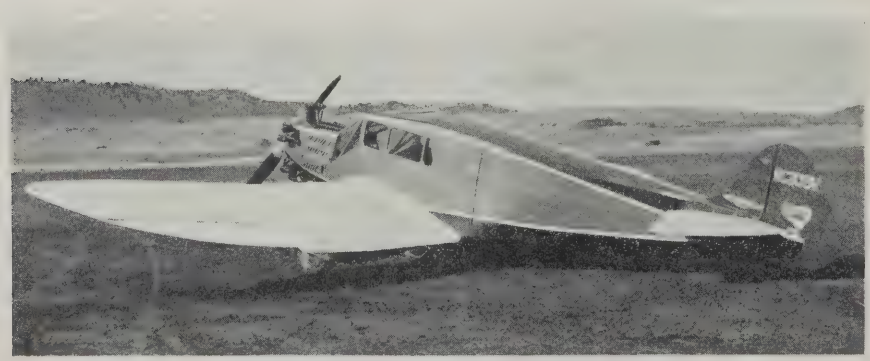
Type: Low wing cabin monoplane.

Dimensions: Wing span, 36 ft. Wing area, 208 sq. ft. Length, 26 ft. 10 in. Height, 7 ft. 9 in.

Weights: Gross weight, 2780 lbs. Weight empty, 1720 lbs. Disposable load, 1060 lbs. Pay load, 610 lbs. Wing loading, 13.3 lbs. per sq. ft. Power loading, 16.9 lbs. per h. p.

Power Plant: Wright Whirlwind J-6, 165 h.p.

Performance: High speed. 148 m.p.h. Cruising speed 124 m.p.h. Landing speed, 48 m.p.h. Climb (full load) approxiately 700 ft. per min. Take-off, (full load), 17 sec.

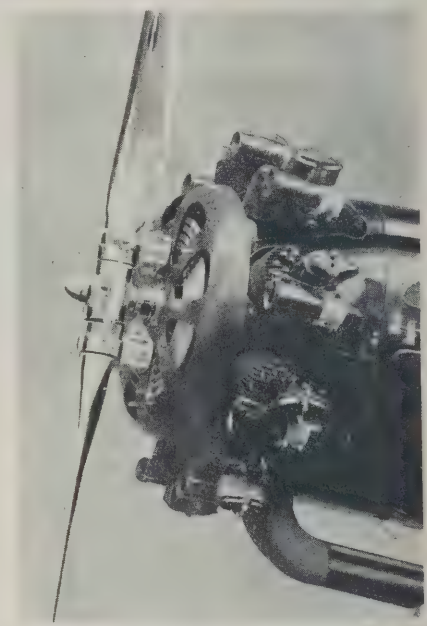


The new Alexander Bullet, manufactured under ATC No. 318

Packard Diesel Installed in Verville Air-Coach

TWO famous names in aviation appeared together at the Detroit Air Show April 5, when the Verville Air Coach powered with Packard Diesel Engine was exhibited.

This new combination came ten years after Alfred V. Verville, internationally known designer, and the Packard Company engaged in pioneering efforts to produce the racer which established a world's speed record and won the 1920 Pulitzer trophy.



The Packard Diesel installed in Verville Air Coach

Powered with the new Diesel engine, the Air Coach has a top speed of 130 miles an hour, a cruising speed of 105 miles per hour and a landing speed of 50 miles an hour. The plane exhibited at the show was finished in black and yellow.

The installation of the Diesel, according to Verville engineers, presented very few problems. The motor mount conforms to the standard set by the aircraft industry, and the cowling about the cylinders was accomplished easily and neatly. The exhaust collector ring of the Diesel is enclosed within the cowling and the exhaust gases are carried away below the nose of the plane.

All of the distinctive Verville features which have characterized the plane heretofore are retained in the Diesel powered plane. The metal side panelling, originated by Verville, unusually wide cabin windows and excellent coach work were all apparent in the plane exhibited at the New York show.

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Sacrificing Sale

Aircraft Manufacturer going into the production of Gliders desire to dispose for immediate sale four slightly used airplanes.—One 110 H. P. "Warner" Travel Air with about 80 hours; one OX5 Curtiss Robin, about 60 hours; one OXX6 American Eagle with special high lift wings, never flown; one OX5 American Eagle also with special wings about 75 hours.—Also various aircraft motors, such as J5 "Wright", Rolls-Royce 460 H. P., Siemens Halske 120 H. P., OX5 etc. We also have one cabin experimental ship nearly finished, cost us $50,000.00 we will sell for $4,000.00 as is. Real opportunity for one who desires to manufacture them. Write or call for inspection:

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New Boeing Monoplane for Transport Service

THE test flight of the new Boeing Model 200, low wing all-metal monoplane, to be known as Monomail, indicated that this plane, a radical departure from other Boeing models, will attract widespread interest particularly from air transport operators. The Monomail, which is a high speed ship with a 525 h.p. "Hornet" engine, has a pay load of 2,000 pounds. Upon completion of the preliminary flight test and approval by the Deartment of Commerce, the airplane will be turned over to Boeing Air Transport for tests under operating conditions.

Another ship of the same design, coming through the plant, will carry six passengers and 800 pounds of mail. The plane has retractable landing gear, special Boeing nose cowling, and many engineering and manufacturing features suggested by Boeing System's extensive operations.

The Monomail is a distinctly new type of airplane in many particulars. A new type of construction has been utilized which, on static test, has proved to be even stronger than the engineers' stress analysis indicated. Although of monocoque construction, full longerons have been used as added bracing. With its smooth skin type of construction, where the rivet heads are flush with the skin surface and with the retractable landing gear, the design is particularly clean and attractive. A new type of instrument board, patented by Gene Johnson, of Pacific Air Transport, is another distinctive feature.

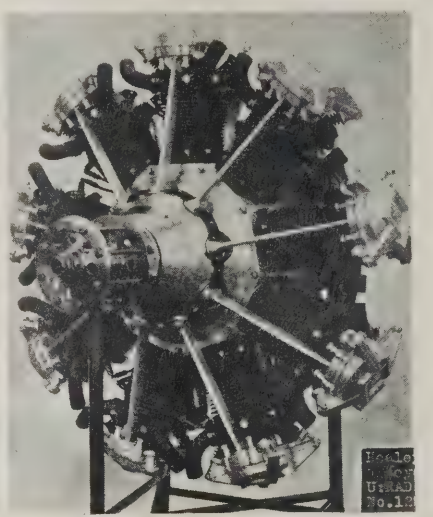
Aeromarine Nine-Cylinder Aircraft Engine

THE Aeromarine, a nine-cylinder engine, will soon be put into production following its recent approval by the Department of Commerce. It is rated by the manufacturers, the Aeromarine Plane and Motor Company, at 115 horse power at 1925 r. p. m.

One of the novel departures from the conventional design of air-cooled engines is the arrangement of the valve mechanism, in which four valves are employed, the push rods for these valves being actuated by a double lobed cam which is mounted on two roller bearings on the crankshaft. These valves, comprising two intake valves, are interchangeable and their arrangement in a perfect dome cylinder has an important bearing on the high efficiency at which the engine operates.

The head is designed to care for a large valve area. The cylinders are of one-piece cast iron which has been found to possess unusual wearing qualities, making possible a low oil consumption of .0054 lbs. per horsepower.

The connecting rods are completely assembled on the crankshaft, the whole assembly being inserted by putting each half of the case on its respective end over the crank shaft. The crankcase is of aluminum



New 115 h. p. Aeromarine engine

alloy in two halves, heat treated to give strength. Pistons are of Bohnalite, with three compression rings above the wristpin and a scraper ring below.

The oil pump is removable as a unit and is made in two compartments, one for pressure and one for scavenging gears.

The engine is equipped with carburetor, air heater and double Scintilla ignition. Provision is made for standard type of starter driven by spur gears.

Specifications: Approved type number 41. Number of cylinders, nine, fixed-radial. Bore, 3 in. Stroke, 4¾ in. Piston displacement, 500 cu. in. Compression ratio, 5:1. Weight, 360 lbs. Horsepower, 115 at 1950 r. p. m. Overall diameter, 36 in. Overall length, without starter, 30 in. Distance from mounting ring to propeller, 17 1-2 in.

Ralph E. Anderson, former army instructor, has joined the Arrow Aircraft & Motors Corporation as factory sales representative, and recently has been making a sales tour of the south-central states in an Arrow Sport Pursuit.

Warner Scarab Junior for Light Planes

THE new Warner "Scarab" 85 H. P., 5-cylinder Junior engine embodies in its construction 90 per cent of the standard Warner Scarab 7-cylinder engine parts.

The new Junior has been designed especially for use in light airplanes and embodies many of the features heretofore obtainable only in much larger engines. There is no radical difference in design between the Warner Junior and the larger Warner 7-cylinder Series "30" model.

Due to the factory's quantity production facilities, it will be offered to aircraft manufacturers at a moderate price.

Specifications for the new Warner Junior follow: Type, static radial air-cooled five-cylinder, four-cycle engine. Rated power and speed, 85 horsepower at 1950 r. p. m. Weight dry without hub or starter, 230 lbs. Specific weights, 2.7 lbs. per h. p. Guaranteed fuel consumption at rated h. p., .55 lbs. per h. p. hr. Fuel consumption, 5 to 7½ gals per hr. Guaranteed oil consumption at rated power, .02 lbs. per h. p. Oil consumption when cruising, 1 to 1.25 pts. per hr. Cylinder bore, 4.25 ins. Stroke, 4.25 ins. Displacement, 301.4 cu. ins. Compression ratio, 5.2 to 1. Propeller drive, direct clockwise. Overall diameter, 36¼ ins. Overall length without starter, 29 ins. Diameter of mounting ring circle, 17 ins. Ignition, dual Scintilla magnetos. Carburetor, single Venturi with mixture control and heater. Starter, Heywood.

New Aviation Equipment of Radio Corporation

Two new designs of aviation radio equipment, a new 200-350 watt combined radio telegraph and radio telephone transmitter and a light 10-watt radio telegraph and telephone transmitter, were shown at the New York Aircraft Show by the Radio Corporation of America.

The airport transmitter is the only commercial offering which has been designed for both ground and airplane telegraph or telephone use and for point to point radio telegraph work. The set was developed with the view to utilization of the telegraph feature for all long range communications with airplanes where 100 per cent communication is desired and the radio telephone will be used for short range work such as last minute landing instructions.

AIRPLANES, FLYING BOATS, MOTORS, SUPPLIES

We handle the new 210 H. P. Lycoming motored 4-place cabin Stinson airplane, equipped with electric starter, brakes and steel propeller is available at the startling low price of ----------$5775.00

100 H. P. Kinner motored 1929 Travel Air 3-place biplane, slightly used, tip top condition, $3850.00; Wright Whirlwind motored J-5 220 H. P. 3-place Waco Biplane with brakes, has 110 hours, A-1 condition $4800.00; OX5 motored 3-place 1928 Travel Air, excellent condition, $1375.00; Excellent condition late 1928 Davis American Moth equipped with 60 H. P. LeBlond motor, has had less than 100 hours usage, $1075.00; Moderately used OX5 motored JN4D $650.00; Unused J-1 Standard less motor and motor equipment $595.00.

Model A 150 H. P. Hispano, small total time, completely checked, dandy condition $550.00; New OX5 motor $575.00; Slightly used OX5 motor $500.00; Moderately used, excellent condition OX5 motor $350.00; New OXX6 100 H. P. motor $600.00; Very moderately used, Navy overhauled OXX6 motor $475.00; Reasonably good used OXX6 motor with Simms Magneto $375.00; OX 90 H. P. motor (not OX5) slightly used, excellent condition $175.00 less hub and exhaust.

New Zenith OX5 carburetors $30.00; slightly used OX5 carburetors, completely checked, $25.00; Slightly used Berling Magnetos thoroughly checked $40.00; Rich Tungsten Exhaust Valves for OX5 or OXX6 85c; Intake Valves 75c; a complete set Burd high compression Piston Rings, standard or oversize for OX5 $2.40; Complete set Burd Piston Rings for OXX6 standard $4.80; Complete set Perfect Circle Rings for either OX5 or OXX6 $12.00.

Red Leather chamois lined helmets $4.00; White gaberdine helmets $1.00; Chamois lined chocolate brown leather helmets $4.00; Protex wide vision, curved lens goggles $5.00; No. 6 Luxor curved lens goggles $9.75; Seesal goggles $12.50; Gosport 2-way speaking tube sets with O. D. helmets $7.50; or slightly damaged unused ones $5.50; one-way speaking tube—no helmet—$3.50; Two-way leather speaking tube outfits $18.00.

26 x 4 new tires $9.50, or unused surplus tires, dandies, $5.00, or slightly used tires $3.50; New tubes $2.25; 750 x 125 new tires $13.75, or unused surplus, excellent condition $7.50; Unused surplus somewhat hardened but serviceable $5.00; new tubes $3.25; Surplus unused tubes $1.25; 20 x 4 new tires $9.50, clincher or straight side; New tubes $2.00; Surplus unused tubes $1.00; 26 x 4 wheels, surplus, excellent, $10.00.

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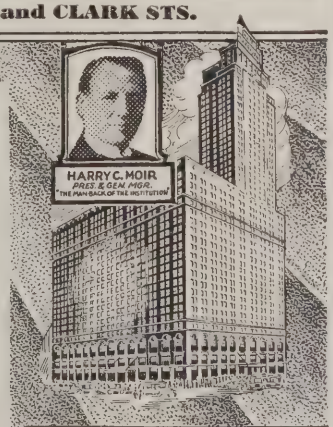

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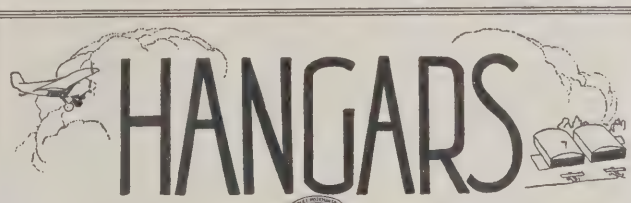

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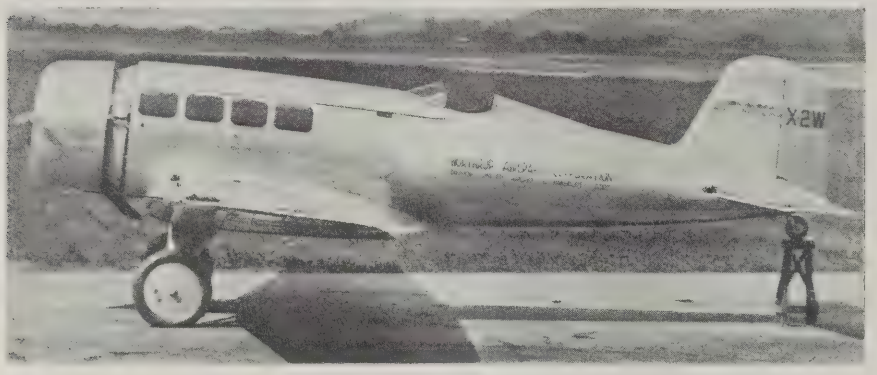
Northrop's New All-Metal Low-Wing Monoplane

THE Northrop Aircraft Corporation, a division of the United Aircraft and Transport Corporation, following close upon the presentation of their Flying Wing in February, now announce the latest Northrop plane, a new all-metal low-wing cabin monoplane, possessing an excellent combination of high operating speed, low landing speed and inherent stability.



Northrop's all-metal Wasp powered low-wing

The Aleclad structure is of a skin-stressed type developed for the purpose of utilizing machine production. Extreme strength and long life with a minimum amount of maintenance are also claimed for the plane.

The cabin interior accommodates six passengers and a baggage compartment, and is spacious and free from cross bracing or similar obstructions. The pilot is located aft the cabin in either an open or enclosed cockpit. Vibration in the engine is practically eliminated through rubber bushings used in the steel tube engine mount.

Specifications are as follows:

Type: 6-place, all-metal low-wing monoplane.

Power Plant: Pratt and Whitney Wasp, 420 h. p.

Gas Capacity: 116 gallons.

Weights: Weight empty, 2300 lbs. Gross weight, 4200 lbs. Wing loading, 14.25 lbs. Power loading, 10 lbs.

Areas: Total wing area, 295 sq. ft.

Performance: High speed, 175 m.p.h. Cruising speed, 145 m.p.h. Absolute ceiling, 21,000 ft. Service ceiling, 19,000 ft. Climb at sea level, 1,300 f.p.m. Climb at 10,000 ft., 700 f.p.m.

New Kinner Engine is Approved

The Kinner Airplane and Motor Corporation will go into production immediately on a new engine designated as the B-5. Rated at 125 h. p. at 1925 r. p. m. this engine recently successfully passed the Department of Commerce 50 hour test run and has been awarded Approved Type Certificate No. 51.

The new motor is a development from the present K-5, 100 h. p. engine. Like the K-5 it is a five cylinder, radial, air-cooled type and retains the same simplicity, durability and smoothness of operation, with the additional strength in parts made necessary by the increased power and temperature and with lighter weight in relation to its power. Many of the parts of the new model are of such design as to be interchangeable with those of the K-5 and machinery now used in the production of the 100 h. p. engine is capable of producing the new engine with but a very small additional investment in jigs and fixtures.

The company now manufactures two sizes of five cylinder engines—the K-5 rated by the Department of Commerce at 100 h. p. weight 280 pounds and the B-5, rated at 125 h. p., weight 290 pounds.

Arrow Aircraft & Motors officials announce that the name "Tangerine" has been discontinued on the recently announced Arrow Sport powered by the Lambert 90 h.p. engine. The ship will be designated as the Arrow Sport "90", as will the Arrow Sport with the LeBlond 90 h. p. engine.

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For the protection of subscribers and prospective subscribers against unauthorized and fraudulent subscription agents, all authorized agents to SOUTHERN AVIATION are furnished with a letter of authority from this company. These letters of authority are not issued for a longer period than 90 days in any case.

New Flying Wing for Endurance Test

A specially designed Flying Wing with a fuel capacity of 875 gallons has been built by the Emsco Aircraft Corporation for an attempt at the world's non-refueling endurance record which is now held in Germany.

The plane has no fuselage but a double tandem cockpit nacelle. The tail section is placed on two all-metal outriggers.

When fully loaded the plane will weigh over 9,000 pounds. After the endurance attempt the company plans to ship the plane to the Orient for an attempted non-stop flight from Tokio to Seattle, a distance of 4,955 miles.

New Glider Log Book

The Johnson Airplane and Supply Company of Dayton, Ohio, have added to their line of log books, a new book entitled the "Glider Pilot Log Book." The book is of vest pocket size 3 1-2 inch x 6 inch, bound in red or green kraft leather with gold lettering on the cover. It has sufficient space for entering approximately a year's record of flight with complete data concerning each flight.

The National Exchange Club in its program for furtherance of aviation has issued an attractive booklet, "Skyways for America," which points out methods that can be adopted by all forward looking communities and civic organizations in developng air transportation. The booklet contans a mass of interesting data and figures showing aviation's growth during the past several years. The booklet contains a foreword by J. P. Muller, president of the Exchange Club.

Attractive pamphlets describing their 1930 line of military aircraft have been issued by the Curtiss Aeroplane and Motor Company. Specifications and performance data on the Curtiss Hawk pursuit plane, the Falcon, observation and attack plane, and the Fledgling primary and advanced training plane are given. Pamphlets on the Challenger radial air-cooled engine and the Crusader six-in-line inverted air-cooled motor have also been issued recently.

Bulletins describing their new nine and 15 inch metric engine lathes have recently been issued by the South Bend Lathe Works. These booklets also describe the regular nine inch and 15 inch 1930 model laths, and contain much information regarding types of drive, styles of legs, prices, and typical application of each machine.

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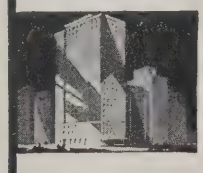

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Advertisers' Index

A
Aero Supply Mfg. Co., Inc. ..... *
American Aeronautical Corp. ..... *
American Eagle Aircraft Corp. 6
Arkoma Airways, Inc. 51

B
Bowman & Company ..... *

C
Carolina Metal Culvert Co., Inc. ..... *
Cessna Aircraft Co. 56
Consolidated Instrument Co. ..... *
Crouse-Hinds Company .....Inside Front Cover
Curtiss-Wright Flying Service ..... 2 and 3
Curtiss-Wright Sales Corp. 8

D
Detroit Aircraft Corp. 1

G
Gilmore Oil Co. .....Inside Back Cover
Great Lakes Aircraft Corp. 49

H
Harrison-Wright Co. 51
Harry Bros. Co., of La. ..... *
Heiss Hotel System 55
Hotel Tuller 55

I
Ingalls Iron Works Co. 53
International Airports Corp. 51

L
Logan Aviation Co. 53

M
Miami Air College ..... *
Miami Airplane & Supply Corp. ..... *
Morrison Hotel 53

N
National Aircraft Co. 53

P
Packard Motor Car Co. ..... 4 and 5
Parks Air College 1
Parks Aircraft Corp. ..... *

R
Revelation Aircraft Co. 51
Rich Associates, G. Gifford 51

S
Service Steel Company 55
Sky Specialties Corp. ..... *
Southern Air Transport Co. ..... *
Spartan School of Aeronautics 55
Stanavo Specification Board, Inc. .....Back Cover

T
Texas Company ..... *
Titanine, Inc. 55

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SOUTHERN AVIATION

The Blue Book of Aeronautical Activities in the Southern States

JULY 15, 1930

GENERAL LIBRARY
JUL 25 1930
UNIVERSITY OF GEORGIA

THAT the South is destined to forge ahead of all other sections of the country in the development of aviation is the confident prediction of many of the nation's leaders in aeronautical activity.

They base their belief on climatic advantages---the fact that over the greater part of the South, flying activities and student training may be carried on the year around. They point to the great distances separating leading commercial centers in the southern states and the consequent greater need of rapid means of transportation. They find added grounds for their belief in the fact that the South is the ideal flying section, with more natural emergency landing fields available for land planes than may be found anywhere else, and with many rivers as well as the harbors of ten southern seacoast states awaiting the arrival of amphibians.

The prediction is fast becoming a reality. No business depression, real or fancied, can curb the development of aviation in a section of such great natural advantages. Many important additions have been made this year to the network of air mail and passenger lines connecting the leading southern cities; and with the signing of the Watres bill, which permits the combination of passenger and freight carrying with air mail service, a great impetus has been given to the further rapid development of air transport lines in the South.

CAPTAIN LIONEL M. WOOLSON

Pioneer~

TODAY, aviation and the engineering world pay tribute to the genius of one man—Captain Lionel M. Woolson. His creation — the Packard-Diesel Aircraft Engine—is recognized as the most important contribution to aircraft power in a generation.

It was with the spirit of the pioneer that Captain Woolson set out to adapt the Diesel principle to radial aircraft engines—to accomplish the "impossible." He believed that upon that principle could be designed a better, safer engine —the *ideal* powerplant that aviation had awaited. The multitudinous problems concerned offered no barrier—and where others tried and failed, he and his staff signally succeeded.

Like many another pioneer in aviation Captain Woolson lost his life in an accident. His untimely death was due to no fault of the motor he designed—it performed perfectly.

Packard lost its brilliant chief aeronautical engineer, but his work lives on. For Captain Woolson was an able executive, as well as an engineer, and carried forward with the development of the Aircraft-Diesel the building of an organization of Diesel specialists.

The Packard-Diesel is now in production and down through the years it will continue as a tribute to the pioneer who developed it—a living memorial to Captain Lionel M. Woolson.

Alvan Macauley

PRESIDENT
PACKARD MOTOR CAR COMPANY

SOUTHERN AVIATION is published monthly by W. R. C. Smith Publishing Co., Marietta, Ga., and Atlanta, Ga. Subscription rates United States and Possessions, $1.00 per year; Canada, $1.50 per year; Foreign, $2.00 per year. Entered as second-class matter Feb. 14, 1930, at the post office at Marietta, Georgia, under the act of March 3, 1879.

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The filing time as shown in the date line on full-rate telegrams and day letters, and the time of receipt at destination as shown on all messages, is STANDARD TIME.

Received at

A2 64 NL=TDS BURBANK CALIF APR 21

OLIVER L PARKS=

ALWAYS MAINTAINING LOCKHEEDS HIGH STANDARD QUALITY PRODUCTION WE HAVE EMPLOYED ONLY PROVEN SEASONED MECHANICS STOP HOWEVER AFTER EXHAUSTIVE STUDY AND OBSERVATION YOUR SYSTEM COMPLETE INSTRUCTION AND PERSONNEL OF STUDENT BODY POSITIVE LOCKHEED CAN ABSORB SOME OUTSTANDING STUDENTS TO MUTUAL ADVANTAGE STOP AMAZED AND GRATIFIED COMPLETENESS AND THOROUGHNESS CURRICULUM OFFERED STUDENT BODY STOP THIS YOUR AUTHORITY OFFER EMPLOYMENT UPON ARRIVAL BURBANK FOUR STUDENTS YOUR SELECTION=

LOCKHEED AIRCRAFT CORPORATION
CARL B SQUIER.

(Above) *Facsimile of telegram recently received from Mr. Carl B. Squier, General Manager, Lockheed Aircraft Corporation.*

(Left) *Student and instructor repairing a Wright Whirlwind engine at Parks Air College.*

EVERY young man who is interested in aviation as a life work should read carefully the telegram reproduced on this page.

The Lockheed Aircraft Corporation is only one of the many concerns in the aviation industry which recognize the supremacy of Parks training and are *anxious to give profitable employment to Parks graduates.*

Remember this when considering a school for your own training, either as a pilot or an airplane and engine mechanic. The recommendation of your school at graduation *means everything to you in getting a good job.* And a recommendation from *Parks* will open doors to you which might otherwise be closed—because Parks has an international reputation for giving the most *complete, thorough, sincere training obtainable anywhere.*

The stamp of approval of Parks will mark *you* as a capable, trustworthy, thoroughly trained pilot or mechanic. It will help you to step immediately into a place in the most fascinating of all businesses. Remember, your recommendation is only as valuable as the character and prestige of the institution from which you graduate.

Remember, too, that no business or profession offers you such opportunities as aviation. The all-important thing is the *right training* at the *right school.* When you know all the facts, we know you will select Parks as *your* training school. Send the coupon for full details today.

Parks Air College was one of the first to be licensed by the U. S. Department of Commerce as a fully accredited transport school

PARKS AIR COLLEGE

DIVISION OF DETROIT AIRCRAFT CORPORATION

784 Parks Airport

EAST ST. LOUIS ILLINOIS

» » COUPON « «

PARKS AIR COLLEGE,
784 Parks Airport, East St. Louis, Ill.

Without cost or obligation to me, please mail your illustrated catalog.

Name.....

Street address.....

City.....State.....

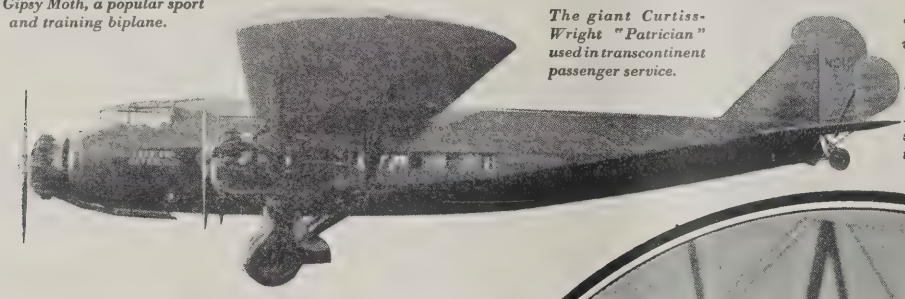
Occupation.....Age.....

I am interested in
Pilot's Course ☐
Mechanic's Course ☐

PARTS AND ACCESSORIES · AIRPORT OPERATIONS · AERIAL MAPS

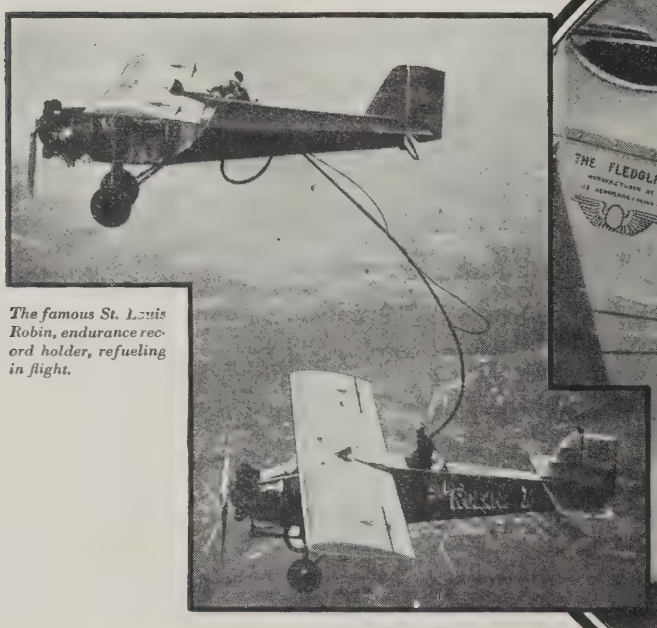
Wings Bring Master the Air

The Gipsy Moth, a popular sport and training biplane.



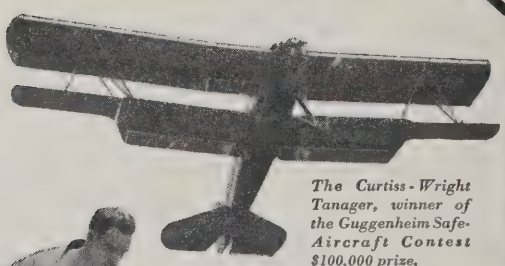
The giant Curtiss-Wright "Patrician" used in transcontinent passenger service.

Chas. S. "Casey" Jones, world-renowned pilot and president of Curtiss-Wright Flying Service, supervises its training activities

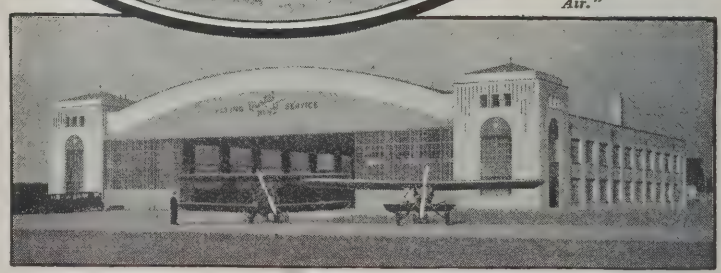


The famous St. Louis Robin, endurance record holder, refueling in flight.

Ready for flight. Curtiss-Wright training methods are based on years of instruction experience. They make "Masters of the Air."



The Curtiss-Wright Tanager, winner of the Guggenheim Safe-Aircraft Contest $100,000 prize.



A typical view of a Curtiss-Wright Air-base building, headquarters of students in flying training.

Training includes study and practice on various standard types of engines.

The Travel Air "Mystery Ship," capable of 235 m. p. h., is the world's fastest commercial airplane.

AERIAL PHOTOGRAPHY · GROUND SCHOOL INSTRUCTION

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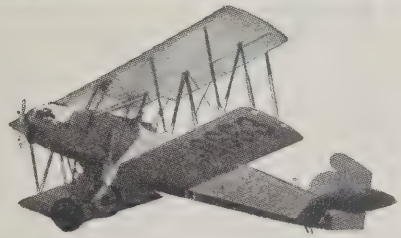
Swift Success . . . . . *with* CURTISS-WRIGHT



"TRAINED by Curtiss-Wright" identifies you as a master pilot in this era of wings. It means that you have been trained by the "world's oldest flying organization"—that you are a member of a flying fraternity whose membership includes many of the greatest names in aviation. Curtiss-Wright training means thorough knowledge of planes and engines, outstanding flying ability, supreme confidence in every circumstance.

The famous organization known today as Curtiss-Wright has advanced directly over a period of nearly thirty years from the first discoveries and developments of two of aviation's greatest pioneers. Curtiss-Wright is a leader in modern aeronautical progress. You have learned from headline and picture that the Curtiss-Wright "Tanager" plane recently won the Guggenheim safe-airplane prize of $100,000. The Curtiss-Wright engineered Travel Air "Mystery Ship" proved itself the fastest commercial airplane ever built. The Curtiss "Robin" holds the world's endurance record. These exploits are indicative of the vast resources of the organization with which you enroll for training.

As the world's largest manufacturers of aircraft and engines, largest owners and operators of airports, foremost instructors in mastery of the air, Curtiss-Wright is able to offer you unusual advantages for training. Curtiss-Wright ground and flying schools, forty in number, are located throughout the United States. All are so completely equipped that they can be truthfully described as Universities of the Air.

Your ground training comprises every phase of aviation—theory of flight, aircraft construction, operation and maintenance of engines, rules of the air, weather conditions and elements of navigation.

Veteran flying instructors with hundreds of hours of flying instruction to their credit will impart to you their knowledge and skill. There is no "run of the mill" in Curtiss-Wright training methods. Every student is instructed as an individual and advanced steadily to an ability worthy of the term, "trained by Curtiss-Wright."

New, modern training planes that encourage confident control are in use in every school. In addition, you will have an opportunity to study at first hand many types of planes—from the light, swift sport planes to the giant air liners. You will learn about the operation of airports and transport service. Every minute of your training will be pleasant as well as instructive.

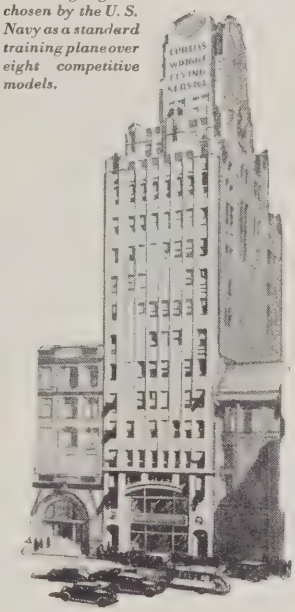
The period of training is so planned that it may be modified to suit your convenience. If, by reason of other duties, you are unable to devote time daily to training, hours may be arranged for you during spare time or on Sundays. Many men in business and industry have mastered the air during spare time.

The cost of Curtiss-Wright courses is reasonable, and to place it within the means of all, term payments may be arranged to distribute the expense over a period of six months to two years, depending on the course taken.

Curtiss-Wright cordially invites you to visit any of its flying schools and learn at first hand the completeness of its facilities and methods. Talk with any Curtiss-Wright trained pilot. You will find him a thoroughly competent flyer, proud of the "flying start" he received from Curtiss-Wright.

The finest flying season of the year is here now. Smiling skies and long, pleasant days will speed your training. Now is the time to take the first step toward mastery of the air with Curtiss-Wright. If you desire further information, fill out the coupon below, check the items in which you are interested and mail it today. The world is calling for men who *know* aviation in all its branches. Prepare yourself for greater success — now.

The Fledgling was chosen by the U. S. Navy as a standard training plane over eight competitive models.



The Curtiss-Wright Building, in the heart of New York. From here all aviation activities are directed.

Instruction by veteran pilots is suited to the individual. Supreme confidence and skill are the result of Curtiss-Wright methods.

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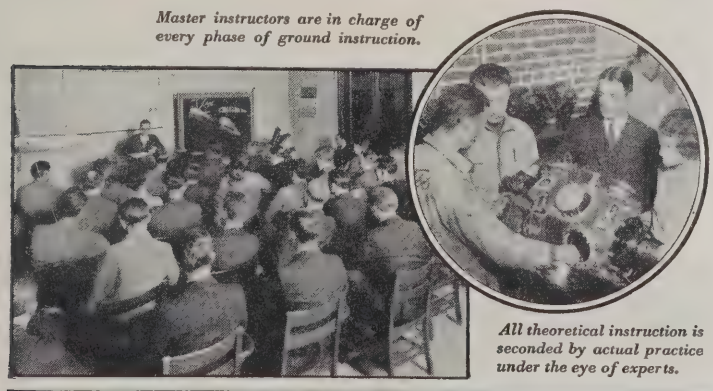
27 WEST 57TH STREET · NEW YORK

Forty bases located throughout the United States

Master instructors are in charge of every phase of ground instruction.



All theoretical instruction is seconded by actual practice under the eye of experts.

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Curtiss-Wright Flying Service SA-7
27 West 57th Street, New York

Gentlemen: I am interested in Aviation and would appreciate more information on the subjects I have marked X.

- ☐ Flight Instruction
- ☐ $50 Ground Course
- ☐ New Finance Plan
- ☐ Opportunities in Aviation
- ☐ Aviation for the Business Man
- ☐ Free Curtiss-Wright Booklet

Name.....*Age*.....

Street.....

City.....*State*.....

Phone.....

REPAIR AND OVERHAUL · STORAGE · CROP DUSTING

Now! Lower New

THE FIVE PLACE PASSENGER PLANE $7,990

Approved Type Certificate 224

Increased production on the New Standard Five-Place plane, has brought about this price reduction. It's still the same plane, every item as good as ever, but appreciably lower in cost.

As a money earner, this plane has no equal in its class. It seats four passengers, hops out of small fields, is safe, dependable and extremely well equipped. It has the famous safety fuselage, built of riveted open-section Duralumin.

Standard equipment includes: complete set of Pioneer Instruments, Eclipse Starter, Bendix Brakes, Oildraulic landing gear struts, navigation lights, steerable tail skid and a complete set of covers.

You must see this plane before you choose a new one. Write or wire for a demonstration.

Specifications and Performance

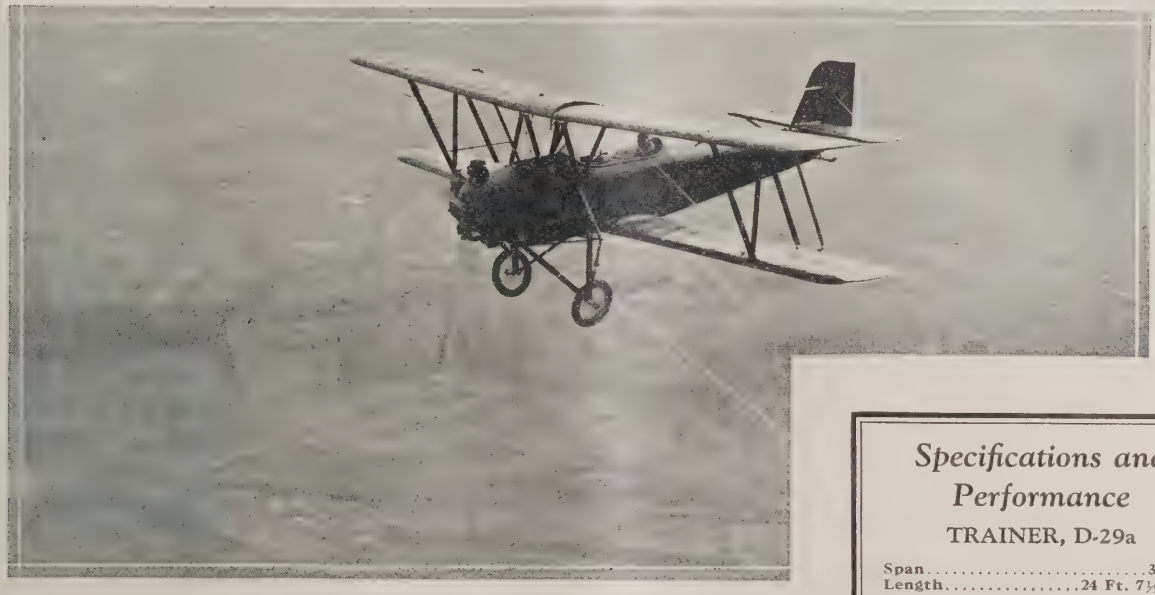
FIVE-PLACE, D-25a

Length Overall	26′ 10″
Height	10′ 2″
Span, Upper Wing	45′
Lower Wing	32′ 6″
Dihedral, Upper Wing	2 Degrees
Lower Wing	4 Degrees
Stagger	34″
Gap	72″
Chord, Upper Wing—70″ Average (Tapered) Lower Wing—50″ Average (Tapered)	
Wing Area including Aileron	350 Sq. Ft.
Aileron Area	26 Sq. Ft.
Stabilizer and Elevators	43 Sq. Ft.
Fin and Rudder	14.2 Sq. Ft.
Load Per Square Foot	9.72 Pounds
Landing Gear Tread	8 Ft.
High Speed (Full Load)	110 M.P.H.
Cruising Speed (Full Load)	95 M.P.H.
Landing Speed (Full Load)	37 M.P.H.
Climb at Sea Level, (Full Load)	750 Ft. per Min.
Service Ceiling (Full Load)	18,000 Ft.
Cruising Radius (Full Load)	430 Miles
Normal Fuel Consumption at Cruising Speed (Full Load)	12.7 Gal. per Hr.
Weight Empty	2010 Lbs.
Disposable Load	1390 Lbs.
Pay Load	810 Lbs.
Gross Weight	3400 Lbs.
Take Off (Full Load)	8 Seconds
Load per Horsepower	15.4 Lbs.
Powered with a Wright Whirlwind 225 hp. Motor.	

New Standard Airplanes are sold direct to purchasers.

New Standard

Prices On *Standard* Planes



$3,131 THE KINNER POWERED TRAINER

Approved Type Certificate 216

Here again, the economies of increased production have enabled us to reduce prices materially on this plane of proven design and acknowledged performance.

The New Standard Trainer, built to Navy specifications, is the leading trainer of its class. It is rugged enough for outside loops, safe enough for primary work and maneuverable enough for any kind of training.

Equipped with Pioneer instruments and all necessary equipment, ruggedly built with fuselage of riveted open-section Duralumin and wings of government specification spruce, it is the ideal training plane.

See this plane at your earliest opportunity. Write or wire for a demonstration.

Specifications and Performance

TRAINER, D-29a

Span	30 Ft.
Length	24 Ft. 7½ Ins.
Tread of Landing Gear	6 Ft.
Chord of Wings (Upper and Lower)	54"
Wing Area (including Ailerons)	245 Sq. Ft.
Aileron Area	21.5 Sq. Ft.
Stabilizer and Elevators	33 Sq. Ft.
Fin and Rudder	13.5 Sq. Ft.
Load per Square Foot	7.3 Sq. Ft.
Load per Horsepower	17.9 per hp.
Weight empty	1175 lbs.
Disposal load	615 lbs.
Gross weight	1790 lbs.
High speed (Full load)	98 m.p.h.
Cruising speed (1650 r.p.m.)	75 m.p.h
Landing speed	38 m.p.h.
Rate of climb	500 ft. per min.
Service ceiling	11,000 Ft.
Take-off time (Full load)	8 Seconds
Take-off distance (Full load)	245 ft.

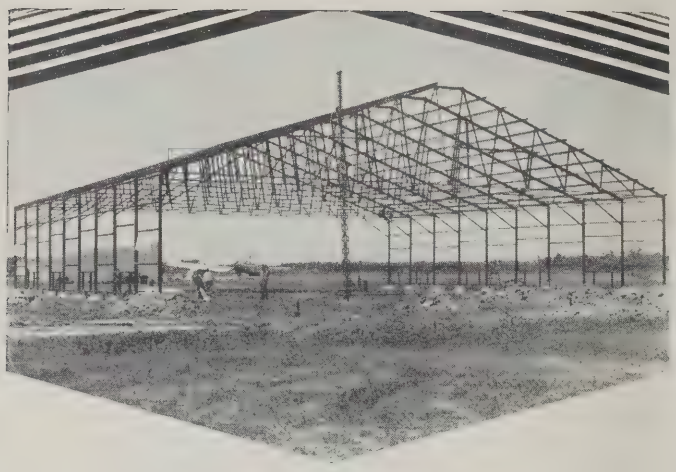
▼ ▼ ▼

Duralumin Fuselage.
Pioneer Instruments.
Oildraulic landing gear struts.
Clear vision gasoline gauge of our own design. Perfect for student training.
Kinner 100 hp. motor.

All prices on New Standard Airplanes are net, f. a. f. Pine Brook Airport, N. J.

Aircraft Corp.

Paterson, N. J.



You can look at blue-prints till you see red . . . .

but the sure index to a hangar's reliability is the reputation of it's builder!

Harry Bros. Co. of La. has built sturdy, permanent, lightning and fire-resisting steel-frame structures for more than a quarter of a century!

Today that long experience is being put into the making of outstanding airplane hangars. The same time-tried principles of design and construction are employed. The same tested and proven metal is used.

Although hangars are a comparatively new thing—*Harry Hangars* are backed by a twenty-five year reputation for quality! You can absolutely *bank* on them.

Because of sectional construction, Harry Hangars can be added to or even moved to a new location. Write for suggestions from our Engineering Department.

A Harry Hangar is a Harry Steel-Frame Building!

"Harry's"

HARRY BROS. CO., OF LA.
NEW ORLEANS,
LOUISIANA

AIRPLANES FLYING BOATS MOTORS SUPPLIES

Wright Whirlwind J-5 220 H. P. motored 3-place Waco biplane with standard wings finished in beautiful red with black strip, equipped with electric starter, brakes and steel propeller, came from factory in August, had less than 120 hours, never damaged, tip top condition, cost nearly $7,000, sacrifice price by owner for quick turn $4,000; Moderately used, excellent condition OX5 motored 1928 Model 10 3-place Waco airplane just newly covered throughout, only $1150; Moderately used 0X5 Curtiss JN4D $550.

Completely overhauled splendid condition 0X5 motor $350; Good condition 0XX6 100 H. P. motor with Simms magnetos $375; Dandy condition only moderately used navy overhauled 0XX6 100 H. P. motor $450, you will be wonderfully pleased with this motor; 150 H. P. Model A Hispano very small usage, thoroughly checked, tip top condition, looks like new, $550.

Flightex cotton cloth 50c per yd., 50 yds. or more 40c per yd. 2¼ inch Grade A scalloped tape 4½c per yd. or 100 yd. rolls $3.95. Ordinary 2¼ inch scalloped tape 3½c per yd., or 140 yd. rolls at 2½c per yd.; Glider cloth 36 inches wide 25c per yd., or 99 inches wide 85c per yd.; 5 gallons Nitrate Dope $7.50; Red Leather chamois lined Helmets $4.00, white Gaberdine Helmets $1.00; No. 8144 Protex wide vision curved lens Goggles regularly $5.00, special at $4.00.

Everything for aircraft, including tires, tubes, wheels, speaking tubes, cable, turnbuckles, etc.

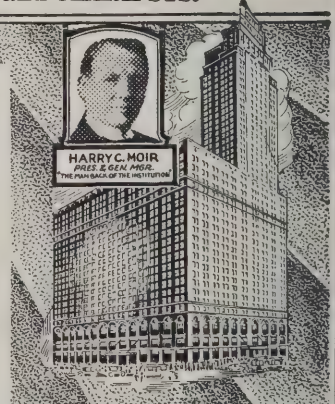
LOGAN AVIATION COMPANY

716 W. Superior Cleveland, Ohio

Already the tallest hotel in the world, the Morrison is destined to become the world's largest and tallest. A new addition, containing 500 rooms, is now under construction—made necessary by an ever increasing demand for Morrison Service.

Radio Set in Every Room

No effort is spared to make each guest's stay most pleasant. Rooms rent for only $2.50 up, yet every room is outside with bath, running ice-water, bed-head lamp, telephone, Servidor and radio set.



Nearest Hotel in the City to Offices, Stores, Theatres and Railroad Stations

July 15, 1930

SOUTHERN AVIATION

Vol. 1, No. 11

Published monthly in the interests of aviation and all aeronautical activities in the southern states

T. W. McALLISTER, *Editorial Director.*
B. H. VINCENT, NAT M. JOHNSON AND S. R. McGILLIS, *Editorial Staff*

Contents

The Airplane Is Indispensable in Our Work 9
It's FARE—Not FEAR 11
Halliburton's 1000 Plane Order 15
Making a Profit on Airport Operation 16
The Development of Miller Field 19
The Curtiss-Steinberg $2,000,000 Airport 22
Increase in Passenger Fares 24
It's the Most Fascinating Sport 25
News of Southern Airports and Airways 27
New Airport Developments 32
Aeronautical Personalities 34
General News of the Aviation Industry 39
New Airplanes and Accessories 49

ANOTHER case of a big business organization which finds an airplane indispensable in its widespread activities is presented in the first article in this issue. For instance, a single typical inspection trip is made in three hours, by plane, as compared with a probable two weeks in the old days. The head of the firm in question gives it as his opinion that there are thousands of business organizations in this country which could use an airplane profitably, and it simply remains for intelligent salesmanship to present the facts.

* * *

THE critical though somewhat facetious analysis of the industry's sales problems by George Foster, in this issue, will be enjoyed by our readers, even though there may not be general agreement with his conclusions. Foster has been closely allied with all phases of the industry's development for many years, in his airport engineering work. He also contributes the excellent article on the new Curtiss-Steinberg airport, at St. Louis, with the two splendid drawings which were prepared by him especially for this publication.

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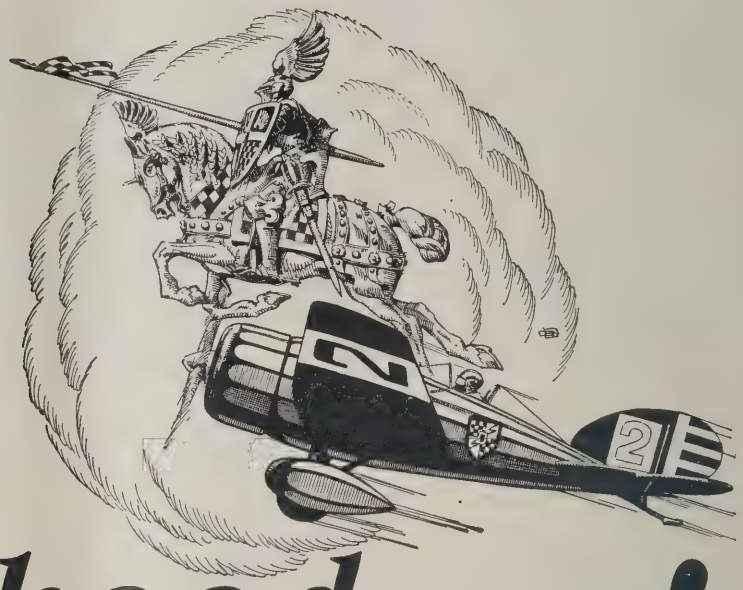


Knighthood a'wing!

WITH the dash, daring and genius of a Knighthood that rides the skies, the 1930 National Air Races will unfurl the banner of aeronautical progress.

This year, more than ever, the races will be the gathering place for everyone in aviation. There will congregate the old timers and the new students, the executives and employees. There will be the world-famous Knights and Ladies of the Air, and the unsung, but vitally important, "grease monkey." There will be new ships, new motors, new instruments—and there will be made new fame by men and women pilots from all parts of the world.

Come, enter, profit, and enjoy yourself at the most colorful classic of the sky—*and Come-A-Flying!*

$100,000.00
IN CASH

and many valuable trophies will be distributed. If you have not received your copy of the "Schedule of Events and Prizes," and information on hotel reservations, etc., write for it now. Address, Cliff W. Henderson, General Manager, National Air Races, Hotel Sherman, Chicago.

NATIONAL AIR RACES

August 23 to September 1, 1930

CURTISS-REYNOLDS AIRPORT—CHICAGO

SOUTHERN AVIATION

Volume 1 July 15, 1930 Number 11

"The Airplane is Indispensable in Our Engineering Work"

By Robert M. Burtt

"DID you ever hear the story of how we happened to buy an airplane in the first place?" asked Mark W. Woods, turning to me. We were breezing along at about 2000 feet over the Missouri River, between Kansas City and St. Louis. I had been invited to go along on an inspection tour of river work that Woods Brothers were doing for the United States Government.

Mr. Woods is president of Woods Brothers Corporation, who have handled many of the largest engineering and construction projects in the South and Middle West. His is a personality that one will not soon forget.

He has the eyes of a dreamer, one who dreams of herculean projects. Many dreamers are incapable of translating their dreams into action but not so Mr. Woods. He is slight of stature but possessed of dynamic physical energy.

Stinson cabin plane used by Woods Brothers Corporation

"No," I returned, "it must be an interesting story."

"It is," he replied. "Our ownership and operation of an airplane in the business is the indirect result of our ownership of a large herd of cattle. Sounds kind of funny, doesn't it? Well, anyway, that's the reason.

"This is the way it happened. Several years ago we owned large herds of Hereford cattle which we kept on ranches close to Lincoln, Nebraska. The time came when more land was needed, so we bought approximately 14,000 acres of Missouri River bottom land along the boundary of Nebraska and Iowa. The big robber took to eating away our land at a ruinous rate. We had to do something about it. Therefore we started experimenting and studying ways and means to protect our own property. We still use today some of the methods of retards and revetments we initiated at that time.

"We were so successful in protecting our own property that other people came to us to protect theirs. We got into some projects for railroads, protecting bridges and embankments. From that we got into work for the Federal Government. Soon our work became scattered all over the Middle-West, although most of our river work was along the Missouri and Mississippi Rivers.

"A fellow came along and sold us the idea of using an airplane to transport our executives and to inspect work from the air as well as to plan new projects. We decided to give the idea a trial and bought a six-place Stinson. Once we had tried it we knew beyond any question of a doubt that we were sold on something we could not do without. We have used airplanes ever since.

"Just how do you use a plane in the business?" I inquired.

Mr. Woods pointed out of the window.

"Here is a good example right here," he said. "We have separate jobs scattered all along the river between Kansas City and St. Louis. There is one going on right now," and he pointed down to a beehive of activity on the river below—workmen's floating barges, barracks, power boats, crews of

men toiling on the job of protecting fertile land from the ravages of the river and at the same time making it navigable for commerce.

Mr. Woods went on: "If allowed to continue, the river would have swallowed up a little town at this point. We are building a bank here that will protect the town from any kind of flood. On each one of these jobs there is a superintendent or foreman who is responsible. If we did not have a plane it would take us two weeks to cover the stretch between Kansas City and St. Louis, by motor car and motor boat. After we had done it we would not know as much about the job as we will know after a flight of three hours.

Mark W. Woods, President, Woods Bros. Corporation

"We can see at once just what progress the particular foreman has made on his job and can check our own observations against his daily reports. When we get to St. Louis, in another hour we will have accomplished more at one-tenth the expense than we could have by any other means, to say nothing of the clean comfort of riding up here compared with the dust, dirt, muck and multitudinous other disagreeable features, that would have been encountered in using other means of transportation."

"It looks as though you were saving quite a lot of your own time as well as that of your executives," I hazarded.

"That's true," he returned," and that amounts to a considerable item in a year's time. Take this trip, for example. In the old days, it would have taken me two weeks to inspect all of this work thoroughly. I am doing it better today in three hours. That gives me thirteen and a half extra days for the other work and to plan new projects. By having our executives oversee and inspect our work going on at the same time, by plane, we are enabled to keep several times the amount of work going with the same number of executives.

"Not so long ago I accomplished work in two days that would have taken me over a week under any other conditions. I left Lincoln, Nebraska, early in the morning, had breakfast and a conference in Kansas City, lunch and another conference in Tulsa, Oklahoma. I stayed in St. Louis that night after attending to matters in two different places in southern Missouri. After finishing my business in St. Louis the next morning I took off for Omaha, and finally landed at Lincoln in time to go to my office before dinner. You can't beat that for service!"

"You are convinced, I take it, that the cost of running a plane is well justified in your business?"

Mr. Woods smiled. "There is not the slightest doubt of it in my mind. Just what the cost is per mile I cannot tell you offhand. Those figures are available back in the home office. However, if there were the slightest doubt in my mind as to the economic value to us of operating a plane I could give the figures at once because I would probably be worrying about them. We have so thoroughly convinced ourselves over a period of time concerning the use of a plane for us that we no longer give the matter a thought. If we suddenly had to give up the use of our plane I would feel just as much at sea as though we had lost the use of all of our motor cars."

"Another way in which our plane is absolutely indispensable to us is its use by our engineering department. Whenever we are approached on a job or intend to bid on one, we send our aerial photographer out in the ship to take pictures of the proposed

(*Continued on page* 18)

A typical example of the type of work that makes the use of an airplane so valuable. These retards and revetments are on the Missouri River near Lexington, Mo.

"*It's* FARE--*Not* FEAR"

A Semi-Serious Analysis of the Problem of Selling More Ships and Developing More Air Travel

By George Foster

A YEAR ago the bulging brows of the strong silent men of aviation were all corrugated, hot and bothered with the problem of breaking down the fears and the inhibitions of the ages to the end that captains of finance and industry and their somewhat indulged families would pay a substantial premium for an exclusive and more or less heroic form of personal transportation.

The passing weeks and months brought the ghastly realization that these esteemed captains are not habituated to the payment of premiums for anything; but rather, that the converse of any such prodigally absurd ideas or practices has made them what they are today. Further, it became increasingly evident that the crying need was not the persuasion of folks that they could flit from hither to yon along the sky lanes without becoming the late Mr. and Mrs. So-and-so, but that they must be shown a dollars and cents advantage accruing from flying as against older and frankly competitive forms of travel. In the language of Mister Edward Rickenbacker, "It's fare, not fear, that keeps 'em on the ground."

Then, as now, every plane accident was news of sufficient value to warrant front-page space

Neither denying nor affirming personal credit or liability for any of the thoughts or actions of the industry ye scribe drapes himself in the license-cloak of the editorial "we" from here on; for we honestly feel that an unchallenged amateur standing of seventeen years of chiseling free airplane rides without a single hint of professionalism entitles one to a certain standing in the industry.

The majority belief in aviation a year or two ago was that the industry had a product which could be, in fact must be, sold to a class of people who could and would pay a substantial premium for either or both sport or transportation; that this class was sufficiently large to support a substantially large industry; and that a long and patient campaign would be needed to convince this class that flying was not unduly hazardous.

This common belief of yesteryear requires neither defense nor alibi. With ship and other equipment prices high, and faced with a terrific task in the providing of fields, buildings, lighted airways, radio communications and beacons, and all of the other things essential to safe and dependable air transportation, we just could not see any success except through the obtainment of relatively high unit charges for the service which we would have to sell. The other angle, that of the relative safety of this service, once we had it established, was one where we had implicit and well grounded faith in our ability to maintain it as soon as routes and facilities were properly installed.

Our big mistake was an under-estimation of the degree to which air travel as a safe medium of transport had already been accepted by the general public. Then, as now, every air accident was news of sufficient value to warrant front page space, and we failed to give folks outside of the industry proper credit for their ability to discriminate between accidents due to well ordered or poorly ordered flying.

Thus, fighting a theoretical handicap, or at least one which did not exist in the proportions which we feared it did, the industry as a whole spent considerable amounts of both effort and money in setting up structures, both physical and of personnel, beyond the real needs of the time and place. Money was pretty free and easy on a sort of happy-go-lucky market, and the attitude of "big money," whatever that is, was most indulgent, in fact downright insistent, on building rather lavishly for the future.

Looking back at the whole ambitious and enthusiastic program, and what has followed since, one wonders why some old hard head didn't call for a show-down, of sorts, on this fear question.

Practically all of us had known for a long, long time that most of our friends and the less outspoken of our enemies would ride in airplanes if free rides could be chiseled out for them; but that their hearts, the old mother's dying wish, the wife's delicate health, their own almost uncontrollable desire to jump from high buildings, or some other sternly valid reason kept them from pushing money through ticket windows to pay for rides.

Looking back almost seventeen years since we had our own first ride in one of them air things, we are honestly unable to recall a single instance where we really "worked on" anybody to get them to take

a ride and failed; nor, of all the people whom we have seen take rides everywhere in that time do we believe that we have actually seen over ten or a dozen who wouldn't take a second ride after they had been up once.

Unquestionably, it takes more or less pure and unadulterated nerve to leave for the first time an earth on which one has lived for a considerable number of years, and for which one has formed a certain degree of affection. Unquestionably, too, there are times in the course of the experience of those who fly here and there under varying weather conditions when the human contents of a ship are divided sharply into two classes. Still, no personal experience in the air has ever quite approached the chill of zooming over a rise in a concrete road to meet one car racing to pass another on an eighteen-foot width of pavement.

Any form of locomotion or transportation has its attendant hazards—and always will have—and flying is no exception. In its early days its toll was terrific, and even today its disasters are too frequent; but every month sees nearer approach to a degree of safety at least comparable to that of other

All of us have known for a long, long time that the most of our friends would ride in airplanes if free rides could be chiseled out for them

well organized and administered transportation facilities.

Irrelevantly and somewhat ruefully, some of the old-timers with just a plenty of tough flying hours behind them have found that casualties in the industry are not confined to ship disasters but can overtake gentlemen behind polished desks when financial geniuses decide to repudiate a bad guess and start looking for a fall guy—but why bring that up?

Here are some of the achievements of the industry during the past few years which have tended materially toward increased safety; definite and extensive increase in the inherent stability of ships; improved structural characteristics due to recently developed alloys combining strength with lightness in weight with better knowledge of the various external and internal stresses and reactions under a wide variety of conditions and positions; more dependable motors coupled with safe reduction in weight per unit of power; more and better airports and landing fields; more widespread dependable mechanical service for both ships and motors; lighted and marked airways between principal cities or areas, with adequate emergency landing fields for use in the event of mechanical trouble or bad weather; steadily improving weather service with better individual knowledge of the general science of meteorology; radio communication, both voice and code, from ship to ground and ground to ship; radio beacons that indicate to the pilot whether or not he is on his course, and if not whether he is off to the right or to the left; and others, all of which are making their contribution to added safety and dependability of service.

Few if any of these improvements have reached a degree of perfection where further refinement may not be expected, but the astounding progress of the last few years warrants the expectation of continued progres.

It would be a wonderful tribute to be able to pay some group of altruistic birds to be able to say that the work done on last year's ambitious program was made possible by big-hearted contributions given by them to suffering humanity in general and infant aviation in particular. However, regardless of the motive, a sufficient amount of money was made available to make a wonderful start in the line of air transportation, schools, and other elements of the industry.

The Rush to Start Transportation Lines

For the benefit and information of those who didn't read the paper that day: several air transport, school, and other aeronautical companies started operations last summer with excellent ships, buildings, shops, et cetera, with transport rates on the general level of about three times rail and sleeper rates, and with charter, school and air taxi rates on the same comparative level. After the rush was over to be the first to do or be this or that, there was no particular congestion around anybody's ticket window, and things soon settled down to rather humdrum operations with one partially filled ship in each direction per day. With the best equipment, facilities and personnel obtainable in the world standing around piling up deficits for interest, depreciation and operating expenses, it came in the order of the day to figure out how long each could stay in business on the paid-in capital on hand, unless substantial increase in sales could be made.

Nobody was particularly distressed, largely on account of the preconceived abstract belief that the overcoming of the old bug-bear of public fear would take quite a while; but as time went on and no regular and sustained increase in traffic came, there arose a sort of dubious wonderment if somebody hadn't guessed wrong.

A little quiet experimentation indicated more and more unmistakably that people—practically all of the people—would ride if they didn't have to pay

for the rides; and query indicated that they would pay for the rides if too high a premium were not demanded over the rates in vogue for competitive transportation.

Early in the winter one or more of the lines made a substantial cut in the rates, but still held them at a level very appreciably higher than the rail and sleeper rates. This cut gave immediate promise of increasing the loadings, but a period of the winter's worst weather came along shortly after the cut, and cancelled runs day after day, followed by intermittent schedules which so disrupted everybody's service that no honest trial of this intermediate rate was ever made.

About the first of the year one of the lines took a chop at the rates with nothing less than a guillotine, cutting them back to virtually the rail plus sleeper rate. All of the other major lines soon followed suit, avowedly to determine if the public will travel by air if they can travel as cheaply there as elsewhere.

The answer can be written without any qualification whatsoever in a sentence of two words: They will.

That's fine as far as it goes, but the fly in the ointment, the cullud gentlemen in the woodpile, or what's wrong with this picture, is that passengers cannot be carried at that figure under the existing setup and produce income enough to meet existing fixed and operating charges. Hence, the old doughboy query of "where do we go from here?"

Some of the old timers have found that casualties in the industry are not confined to ship disasters

Taking account of stock revealed only one place where a quick cut in the cost of doing business could be made, and that was in payrolls. It was a sad sight, mates, seeing the congestion on the icy sidewalks of men going down the street talking to themselves. The sole alleviating note in the dirge was that a few stuffed shirts were washed overboard along with the sailors.

Cutting Down the Overhead

Some cuts have been made, also, in rates of pay, and it is reasonable to expect that a period of further adjustments may extend for some time as more and more men come into the industry and compete for jobs for which there has been comparatively little competition to date. Also, general increase in the safety of flying will probably curtail premiums paid for the hazards of the industry as they are removed or diminished.

The fact that the payroll was the only target immediately available for the economy sharpshooter unquestionably tended to exaggerate the opportunities present there for ultimate economies, in comparison with the larger but more inflexible fixed charges on ships and other capital investment.

Touching first on the question of interest and depreciation charges on fields, lighting systems, radio, and buildings. Obviously just as big and as good a field is needed to land a few tri-motored ships per day or per week as would be needed for the handling of dozens or even hundreds of similar ships, and the same thing is true of the lighting and the radio, the demand being one of function rather than of capacity. Similarly, lathes, drills and other shop tools and fixtures adequate for the overhaul of one motor can be used for similar work on a lot of motors without appreciable, if any, increase in capital investment.

In lesser degree this is true of buildings, many present-day structures housing only a few ships whereas their capacities are greater. Without question, some of the buildings built last year cost too much money in proportion to the revenues which can be derived from them.

With these things that are already built there are just two ways of reducing their charges against the unit charge per mile of travel or per hour of student instruction. First, to write off some equitable proportion of their costs to advertising or promotion; and, second, to sell many, many more miles of air travel and many, many more hours of student instruction to the end that each mile of travel and each hour of instruction will be taxed for a smaller percentage of these fixed costs.

This brings us to the real and outstandingly impressive object of them all—the price tag on the present-day airplane. It is a thing of impressive magnitude. Present high ship costs are occasioned primarily by limited production. Under mass production costs could be cut again and again, but until there is an immensely bigger market there is no justification for mass production, and there is going to be no immensely bigger market until prices get lots lower; and there we go 'round and 'round the li'l ol' circle like a canine pursuing his own intimate and personal caudal appendage.

Unquestionably, this low priced mass production will come; the question is when it will come. In the opinion of some of the more thoughtful brothers, things will rock along for a while yet with a gradual price recession, and then some outfit will slam down with a mass-production-low-price program that will make the rest either follow suit or fold up.

On a hunch, such a move will not come this year or next; or until ground facilities all over the country are more generally developed, and airports, or at least safe landing fields, are provided in most towns or cities of over a few thousand population. Today the man with the private airplane is in the same place his dad was with his first automobile—few places where he can go on account of the roads.

If one is sufficiently gullible to believe everything he reads in the papers, these more or less united forty-eight states are the world's one best bet as far as having wonderful airports is concerned; but the shortest road to disillusionment is to start going places and setting down in a few of our best newspaper airports during a rainy spell.

And here we come to another circle as to whether towns will provide fields in advance of strong local demand, and whether or not this local demand will come until the sky over Main Street gets all congested with them air planes looking for a place to light and let the passengers come into the stores to buy overshoes, summer dresses, coffee and soda pop.

Looking into the detail of ship prices a bit. As far as personal ownership is concerned, these prices are too high for those millions of us of the common herd between the upper and the lower crusts; say those of us between thirty and fifty, with incomes from thirty-five to seventy-five hundred dollars a year; with one wife, two or three very promising children, a partially paid-for home, and something running on four wheels, originally advertised as an automobile.

The shortest road to disillusionment is to start going places and setting down in a few of our best newspaper airports during a rainy spell

By having the girl friend wear the winter coat another season or two, delaying painting the house until next spring, and kidding Junior out of going to boys' camp this summer, we will be able to turn in the old bus this spring for enough for the cash payment on a new shiny boat with eight cylinders about the size of peanut butter jars, six tricky wire wheels, and more speed than we'll ever dare to step on.

Let's look at the nearest thing available to this in an airplane. There doesn't seem to be anything available in a five-place job, but as long as the kids are small we guess that they will be fairly comfortable in the back seat of a standard four-place cabin ship of some reliable make, with the wife up in front where the necessary back seat driving can be done from a place in the sun. Running the forefinger down the right hand column we find that the said finger travels express to $5775, with no more local stops for quite a few floors above there, for a ship of those general characteristics. Probably we would spend $225 more by the time we had it delivered with a few extra instruments and gadgets not included as standard equipment—say, in round figures, four times as much as we pay for the new bus.

Most of us stop right there, for as far as we are concerned personally there is not money enough in the world to buy something four times as expensive as the new bus; but supposing we could—in round figures this ship weighs about two-thirds as much as the car, costs about four times as much as the car, costs about six times as much per pound, and the cost of the ship per seat of its normal capacity of four is five times as much per seat as the automobile.

Coming to the larger ships we find that the same general parallel exists. Take two specific ships for example, one a tri-motored monoplane seating fourteen passengers and listing at between fifty and sixty thousand dollars, the other a biplane seating eighteen and listing at between ninety and a hundred thousand: one at about four thousand and the other at something over five thousand dollars per seat of capacity—from thirteen to seventeen times the per seat cost of the new car.

There are just a plenty of factors combining to set up and maintain so comparatively high level and here are few of them. Comparatively, there are a terrific number of hours of technical engineering work behind the production of each ship. Once the boy with the eye-shade and the slide-rule wipes his pen, pulls down his vest, and closes the door behind him, you can take what is left and build either one or a million airplanes by it; but if you build only one, and make money on it, all of the cost of its design must be tacked on this one, whereas spreading this one cost over a million of 'em would be a big help in putting the cost of ships down where last October's party put the cost of some of our pet stocks.

Production costs are tremendously higher for ships than for cars on account of the higher ratio of hand work versus machine work. Practically every part entering into the construction of a car comes click, click, click from the jigs, dies, shears, punches, bulldozers and other machine tools specially constructed to turn out that particular part, and it alone; whereas practically all of the parts of the ship are made by hand or on hand machines, or at least on machines that must be readjusted and refitted for different operations.

There are a lot of problems in the little old game, but most of them will be settled around the table the day somebody says: "Gentlemen, our engineers are now satisfied that this group of designs on the table before you will not have to fight any basically improved competitive designs for at least three years, and that production costs per ship for this design and that design will be so-and-so if we install modern machinery for this production, and that the production of blank number of ships at these prices during the next three years will justify the program. Fur-

(*Continued on page* 21)

Erle Halliburton's Proposed

1,000 Plane Order

By Sherman T. Kline

Erle Halliburton, president of Southwest Air Fast Express, whose recent proposal to purchase 1,000 Ford tri-motor planes has aroused much speculation as to his expansion plans.

ERLE P. HALLIBURTON, president of Southwest Air Fast Express, Inc., and oil multi-millionaire, recently returned from Detroit where he was negotiating with the airplane division of the Ford Motor Company for the purchase of 1,000 fourteen-passenger, trimotored transport ships at a cost of $30,000 each. The Safeway lines now has eleven of these planes in daily operation over its routes, and requires additional ships for the proposed extension of its lines.

Although this craft now costs $50,000 each, Mr. Halliburton expected to receive a much lower price for an order of such magnitude, in view of the fact that a considerable saving would result from manufacturing this plane upon a quantity basis. However, some difficulty was experienced due to the fact that motors and many accessories are purchased from other firms, who in turn are unable to guarantee delivery of their products in such quantities.

The contract would call for the delivery of two planes weekly for the first year, and three or four planes weekly the second year, with a gradual increase as the facilities of the line are expanded to absorb a greater number of planes weekly.

"A definite statement regarding the placing of this order cannot be made now," Mr. Halliburton said in an interview with a representative of Southern Aviation, "due to the fact that no contract has been signed. The contemplated deal with the Ford interests has not been consummated, for the reason that they have so far been unable to obtain delivery in sufficient quantities of the various accessories which they do not manufacture.

"Accordingly, the contract is open to any manufacturer of 14-passenger, trimotored transport planes, provided his ships meet with our approval. A half-dozen airplane companies have agreed to fill the order, but since their proposed ships as yet are largely untried, we are waiting to hear from an established manufacturer with a tried and proven plane of the type we desire. We will not under any circumstances consent to sacrifice the safety factor for which our line is noted, by placing in operation planes regarding which the least doubt may exist concerning their airworthiness.

"With planes of the type we use costing $50,000 each, a transport company cannot expect to show a profit at anything near the present passenger rates. The only solution of the problem lies in mass production and mass operation of aircraft.

"In my opinion, 14-passenger planes, powered with three motors, and equipped with every device for the safety and comfort of passengers and crew, can be constructed on a quantity basis for not to exceed the figure of $30,000 each which I have set as the price I will pay for 1,000 planes of the type mentioned. And this can be done at a good profit to the manufacturer, if only he will go on quantity production and secure the cooperation of firms making motors, instruments and accessories which he cannot or does not produce.

"Obviously, standardization is needed in the aircraft industry, and it will ultimately come. As their reason for not establishing quantity production, some manufacturers state that they are awaiting the designing and construction of an 'ideal' motor. Yet in all these years of intensive and highly competitive automotive research and experiment, during which time approximately 35,000,000 automobiles have been manufactured, have we developed an 'ideal' automobile motor? To devise the best motor possible, commence mass production, eliminate faults and make improvements as they are discovered, is my idea of the quickest and best method to reduce the present extremely high prices of airplanes. Manufacturers will eventually have to be contented with taking a much smaller profit on each ship and building a far greater number of them.

"The first of this year I made an interesting experiment," continued Mr. Halliburton. "Airline travel was not nearly so well established as at present, and I determined to spend some money to find out whether high rates or fear was keeping people on the ground. Accordingly, I cut our fares in half, making them equal to railroad plus Pullman rates. The immediate response as shown by the huge increase in passengers was very gratifying, proving that people are no longer air-shy and are eager to

(*Continued on page* 33)

Lieut. James Fritz, instructor at Grand Central Air Terminals

Making a Profit on

A Watchful Eye on Overhead Along with Aggressive Salesmanship Is Essential to Profits

By W. E. Debnam

"WHEN you need it, buy it." Dave Driskell, chief pilot and operations manager of the Grand Central Air Terminal, Norfolk, Virginia, rapped the side of the cockpit of a Grand Central Bird training plane to drive home his words.

"In a lot of places airport operators are feeling the pinch of hard times for the simple reason that they did a nose dive with their credit in order to start operations with a big splash. Crash would be a better word.

"They seem to have the idea that, no matter if their airport is in Skeedunk or some other cross-roads village they've got to impress the public with the amount of equipment they've got in the way of building and planes and other things.

"Of course, this is all very nice where you have the money to spend, but to the average airport operator who is faced first and necessarily with the cost of securing a site unless he has plenty of idle money lying around, the only thing he needs in addition to a place to land and take off from is an airplane.

"After all, that's all the public is really interested in. It's the ship in the air that catches Old John Public's eye, not the building that houses the ship. It's the ship in the air that is going to make other people ride. It's the ship in the air that attracts students. In other words, it's the ship in the air that pays the freight.

"Any additional outlay, while nice if one can afford it, as I said before is just so much more load to carry. And it's not pay load. Build hangars and buy additional ships when the need arises, and not one minute before. Any other system of operation is, financially speaking, taking off down wind and can be expected to have the usual result."

The soundness of Dave's advice has been concretely demonstrated in the case of the Grand Central Air Terminal. Owned by Ben Epstein, who for the past nine years has been actively engaged in the jobbing of airplane parts and supplies, the Grand Central company has been in operation since April of last year. Their entire initial outlay, in addition to the field, located on Granby street, the principal thoroughfare and within 15 minutes auto ride of the heart of the business district, was for one Swallow airplane and an 8 x 10 shed for the storing of supplies whose nature required that they be kept out of the weather.

From this modest beginning, the business of the terminal has increased until it now operates three planes—a Bird and Waco in addition to the original Swallow—and an order has just been placed for two more Bird planes. An additional instructor, Lieut. James Fritz, formerly of the Army air service, has been engaged and plans are now being drawn for a modest hangar. The class of students now numbers more than thirty and new ones are being received almost daily.

In addition to holding the initial outlay at as low an altitude as possible, Dave gives the following necessary ingredients for the successful airport: 1, careful flying; 2, good location; 3, publicity; 4, stress your passenger hops; 5, build up aerial photography.

"Some fellows seem to have the idea," he said, "that in order to impress the public with aviation they must bust the Department of Commerce regulations wide open at every opportunity and show the folks on the ground just how many things they can do with a plane

FLYING
Government Inspected Planes
LICENSED PILOTS ONLY
PUBLIC TAXI SERVICE
CROSS COUNTRY FLIGHTS
Aerial Photographing and Mapping
Flight Instruction
Everywhere young men and young women are learning to fly. Good pay and a steady job await those who know how to handle a plane. Courses range from 60 hours upward, depending upon the student. Apply today for particulars. Charges reasonable, pay as you learn.
PILOTS AND PLANES LICENSED BY DEPARTMENT OF COMMERCE SHIPS ARE INSPECTED EVERY TWO WEEKS BY GOVERNMENT REPRESENTATIVE.
Grand Central Air Terminals
NORFOLK, VA.
Take Willoughby and Ocean View Cars Direct to Terminal
PHONES 23503—21708

Typical newspaper advertisement of Grand Central Air Terminals

AIRPORT OPERATION

A group of students of the Grand Central Air Terminal Flying School. Dave Driskell, chief pilot and manager, is standing at the extreme left

and still be able to walk away from the landing.

"All of which is just about as far wrong as it could possibly be. Stunting is all very well, and every pilot should be able to know how to do it, but it's a darn poor way to get people to ride. And, after all, it's the folks who get into planes, not those who stand on the ground and marvel, that are going to pay the airport's way.

"Fly carefully. Take no chances with your plane. Let the folks in the front cockpit and those watching you on the ground, realize that, after all, there's nothing so very heroic about aviation—that it's just another form of transportation that is no more dangerous than the automobile if handled properly. Don't try to give your passenger a thrill by stunting. If he's never ridden before, you can bet that he's getting plenty of thrill anyway without throwing in any fancy stuff.

Customers for the Flying School

"When you have sufficient altitude, if the passenger has shown any such inclination, let him take hold of the control in his cockpit and follow you through. Wiggle the stick and tell him to fly the ship himself—just for a minute or two. It's the best way in the world to get students. Once a man or a woman realizes just how easily he can handle a plane, it's a pretty sure bet that if he or she can raise the money and pass the physical tests, you've got a new student.

"And it goes even farther than that. John Smith. who took a ride in a plane, will tell his friends about it of course, but in a day or two it's all old stuff. But you just let John Smith fly the ship for a minute or two and he'll be talking about it for a month—telling his friends, telling everybody, how, when and where he started sprouting wings. It's the best business getter in the world."

"There's an old saying," Dave continued, "about a mousetrap or something, and that any bird who builds a better one than the other fellow will have the world trooping to his door. It may be true of mousetraps, but I'm telling you that with airports you've got to go to the other fellow's door.

Importance of Airport Location

"By this, I mean locate an airport along some highway or street that a lot of people drive over. Business locations for drug stores and grocery stores and cigar stores, mean everything to the success of that business. They tell me that when some of the big chain stores start out to pick a location they keep men stationed in front of the prospective site for days and weeks counting the number of people that go by. The same holds good for airports. People have to buy drugs and groceries and they will use tobacco—but they don't have to fly.

"I'll bet you that if a census of the student fliers in the country today should be taken, it would show that not a small percentage of them got the flying idea from some casual visit to a flying field. They saw others fly there, took a hop themselves, and before long they were taking regular lessons.

"Put your airport on some site along a popular highway. It may cost a bit more in the beginning but it'll pay good dividends. Don't make it necessary for people to 'drive out to the airport.' Locate it so they 'drive by the airport.' A lot of them will stop—and fly."

The best publicity an airport can get, Dave says, is that word-of-mouth advertising by which one person who has taken a flight tells his friend about it. "And then," he continued, "there are the news-

papers. I have found them unusually friendly to aviation and ready to help in every way possible.

"Develop your nose for news and if something of news value happens around the field, give the papers a ring. It makes no difference whether the story has to do with aviation; tell the reporters about it.

"Then, too, if by any chance you should have an accident, such as occurred with us several months ago when a bolt in the landing gear of a plane gave way and the ship turned over with two passengers aboard, don't try to keep it out of the newspapers. Just as soon as you can, call them up; and when the reporters arrive tell them exactly what happened. In the case of our accident, it really brought us more business for the reason that one of the passengers, a man of 50 years of age who had never flown before, got right in another ship and we gave him a ride. In the stories that appeared, the spill was treated as of minor importance.

"Don't try to hide things from newspaper men. They'll find out some way or other."

"Another source of publicity, and one that pays dividends in addition, is in taxi hops. Let it be

Mr. and Mrs. J. D. Rodehaver. Both are students at the Grand Central Air Terminals Flying School

known that your ship is available for taxi hops to cities within a radius of 100 miles. From time to time you'll get passengers, and every time you have a taxi passenger be sure that the newspapers know about it.

"The romance of the air taxi appeals to the public imagination and any such hop as this is good for two or three paragraphs. If the passenger is prominent enough, or if the cause for his trip is of an unusual nature, the story may even break on the front page."

"One of the main things that is carrying the load in airports throughout the country today," Dave continued, "is the passenger trade. Nurse this like you would your first baby, for out of it must grow the business that is to sustain your airport. These short two-dollar-and-a-half hops in the end will grow into regular students and these in turn into customers for planes. And never frighten a passenger. As I said before, he or she is getting thrill enough without you trying to add to their first flying sensation by stunting.

"Another source of income and publicity, which we have found profitable is aerial photography," Dave continued. "We were able to pick up a good second-hand aerial camera for but a small cost and it has paid for itself many times over. In addition to photographing commercial plants from the air for use in advertising and otherwise by the firms in question, we have taken a number of aerial views of Norfolk and surrounding cities which we have furnished to newspapers. These, appearing sometimes in print several columns in width and many inches deep, have always carried the credit line of the Grand Central Air Terminal Photo. It is good advertising in that it not only brings us more photographing business but attracts the attention of the public to our activities."

The Airplane is Indispensable

(*Continued from page* 10)

undertaking. From those pictures our engineering department makes up its estimate of what we can afford to do the job for.

"You would be surprised to know how accurately we can figure our bids from this aerial survey. We can get the very low-down on the proposition. River work is especially uncertain. The current works fast and can do an awful lot of damage in a short time period. It is easy to underbid. Our system prevents this, and correspondingly enables us to bid low when our survey shows that this is justified."

I sat gazing out of the window, lost in thought. Suddenly Mr. Woods tapped me on the arm, pointing down to the river.

"Do you notice that bend?" he asked. "Well, a year from now that won't be there unless something is done about it. It will have been sacrificed to the relentless appetite of the Missouri.

"It is in this way that we get many of our jobs. Our airplane enables us to see possibilities for work in advance. We may see something wrong that $20,000 worth of work will fix now, that, if allowed to delay, may cost several hundred thousand in later years. A sort of hearkening back to the old saying, 'an ounce of prevention is worth a pound of cure'."

Some of the outstanding engineering feats of Woods Brothers include: The Gulfport, Mississippi, sea wall; the water-tight wall protecting the Illinois Central Railroad at New Orleans; the Starved Rock lock and dam on the Illinois River; the Woodswether and Fairfax industrial developments at Kansas City, Missouri and Kansas.

I asked Mr. Woods how many firms he thought there were in the United States that could profitably utilize an airplane in their business.

"I think there are thousands of business concerns in this country who could economically use the services of an airplane in their activities," he replied. "It only remains for some intelligent salesman who really knows his business to analyze their needs and sell them the idea."

The Development *of* Miller Field *at Winston-Salem, N. C.*

Upper left is an aerial view of the Miller Municipal Airport taken during the 1929 Ford Reliability Tour visit. Below is shown a section of the business district of Winston-Salem. Lower photo by Southern Aerial Surveys, Henderson, North Carolina

THE Winston-Salem municipal airport, known as Miller Field, from the day of its opening October 14, 1927, has been one of the busiest airports in the Southeast.

The air-mindedness of this section is best demonstrated by the facilities provided at Miller Field and the conditions under which the airport was established and operated. It is one of the oldest airports in the South, having been opened only six months after Colonel Lindbergh made his solo trip to Paris. It was officially opened by the flying colonel six months after his famous flight. The airport is actually ten minutes from the business district by automobile and not as the Mystery Ship or a cannon ball would travel.

The field is a gift of two of Winston-Salem's most prominent citizens, A. C. Miller and R. E. Lasseter.

The airport is operated by Reynolds Aviation, Inc., having been opened in 1927 by Smith Reynolds, an old-timer in aviation who was one of the chief operators at Curtiss Field, Long Island, in the days when the industry was making its initial effort to shed its swaddling clothes. His knowledge of flying and flying equipment gained from the experience as an operator at the New York field enabled him to open the Winston-Salem field without going through the pioneering process found necessary to the operation of most airports.

H. B. Poindexter has recently been appointed manager of the field. His experience in aviation dates back to 1917 when he entered the army flying service at Kelly Field. He has been actively engaged in flying since leaving the army service in 1919. He spent several years in Florida, Cuba and the West Indies as pilot of both land and sea planes. He is well known in southern aviation activities, having spent the last several years as an operator at his home, Lexington, Virginia.

The airport is located only three miles from the center of the business district on a broad plateau which is the highest area in the county, and which affords excellent natural drainage. The field is never rendered unsuitable for use after intensive rains. It is covered with a thick grass sod. The landing area covers 100 acres and provides runways 2500 feet and 1800 feet in length. From the buildings in the business district, one may see planes taking off and landing at the field, which gives

one an idea of its nearness to the city.

There are only a few months in the year, from November to March, when there are noticeable fogs, and there is never enough snow in winter to curtail flying activities. The field is fully equipped for night flying, having flood and boundary lights. The standard 100-foot circle for landing guidance is located in the center of the field and the name Winston-Salem is painted on the roof of the hangars. The two hangars are of steel frame and each is 60 by 70 feet. Hangar storage is provided at a rate of $2.00 per day.

The shop equipment of the Reynolds Company is among the most complete to be found in the Southeast. The machine shop adjoining the hangars is 18 by 70 feet, which is large enough to allow moving a complete fuselage in and out. It is equipped with two lathes, one of 16 inches and the other 6 inches. Arbor press, high speed drill for valve grinding, testing block for motors, jigs for repairing wings, an Oaklite washing machine, a bake oven and several hundred dollars worth of miscellaneous tools are provided for turning out most any mechanical job that the operators might be called upon to do.

A supply of propellers and spare parts for Wright and Velie motors are always available for immediate installation. In the company's various planes, there are eight OX-5 motors, five Velie M-5 type motors, and eleven Wright Whirlwinds which are serviced and overhauled from time to time by the two expert mechanic, assisted by three student mechanics, who are working with a view to becoming licensed airplane and engine mechanics.

An attractive office and administration building is located adjacent to the hangars.

Flying Equipment at the Field

Flying equipment of the company includes Wacos, Monosports, Monocoupes, a Fokker Universal and a Fokker Tri-motor. The latter is known as "The Voice of the Sky," and has been widely used for advertising purposes. It is now being used by the Plane Speaker Corporation in a nation-wide advertising campaign.

While the Reynolds Company is equipped for nearly every form of aerial activity, their major activity is student training. During the winter months most of the students are residents of Winston-Salem and surrounding towns; but during the summer, the number is usually doubled with the enrollment of college students who spend their vacation in learning to fly.

All student instruction is handled by Mr. Poindexter, manager of the field, and Smith Reynolds. A charge of $25.00 per hour is made for dual instruction, and $20.00 for solo time, making a twenty hour private course cost the student about $400. The private course includes instruction on Wacos and Monocoupes.

Passenger hops and charter work, next to student training, have been found to be the most lucrative phases of operating the airport. Spectacular stunts and aerial circuses have not been encouraged by the Reynolds Aviation Company to draw crowds to the field. However, the operators believe that some means should be adopted of a less spectacular nature than stunts to attract people to the field.

A weekly passenger service under the direct supervision of Mr. Poindexter was inaugurated recently between Winston-Salem and Myrtle Beach, S. C. The Reynolds Company is using a four place Fokker Super-Universal monoplane for this service at present.

The plane leaves Miller Field at noon each Saturday, arriving at Myrtle Beach two hours later. The return trip is made late Sunday afternoon, giving passengers the advantage of a fuller week end at the sea shore.

Stimulating Passenger Activities

Mr. Poindexter believes that sightseeing and taxi work may be made more popular through a reduction of rates for passenger hops. Rates for this service have already been reduced to 32 cents per mile on the four-place Fokker, making each passenger's fare about eight cents, or one and one-half times railroad fare. Mr. Poindexter says that there has been an excellent response from this reduction already and, with the coming of vacation time, he expects this service to become very popular. Charge for short hops over the city in the four-place Fokker is $2.50 per person.

In order to further test the effectiveness of reduced rates in drawing passengers, a "Ladies Day" was held on a recent Sunday when ladies, if accompanied by a male escort, were flown over the city for the price of a single passenger. On that day the field was crowded with automobiles. It was the busiest day experienced at the field in a long time and the revenue derived per flying hour was very satisfactory. Most of the passengers on these trips had never been up before and are regarded by Mr. Poindexter as good repeat prospects, and eventually some of them probably will purchase planes.

There are several privately owned planes at the field at present. Private owners are permitted to store their planes at the rate of $28.00 per month.

Mr. Poindexter believes that the operation of an airport offers an opportunity for trial of some new theories. "Our airports are no longer crowded with curious visitors," he says, "which is both pleasing and disturbing to the operator. It shows that an airplane is no longer regarded as a circus curiosity worth driving to the landing field to see or maybe touch. The brighter side reflects the public's willingness to accept air travel as being here to stay, with the strangeness worn off, and the plane taking its place along with the automobile and train as a means of transportation.

"We must continue to get these visitors out to the airport. It is from them that we get our students, our taxi passengers and prospective plane buyers. Every trip to the airport creates a little more interest in flying and a mere casual observer today in a week or a month or a year may be a student or a plane owner, and since we cannot land the planes in his backyard, we must get him to the airport.

"This necessitates the airport being made as attractive as possible, and I believe those cities which are building their airports on the amusement plan are making a wise move.

"A good airport is the first essential and then its popularization through some amusement activity will eliminate some of the indebtedness being rolled up annually by many airports throughout the country.

"One nearby city is planning the development of a port that will provide complete hotel accommodations for visitors and operating personnel, tennis courts, miniature golf courses and swimming pool, and will encourage the building of homes in the vicinity of the field so as to make it a community center."

A portion of the machine shop and accessories department at Miller Field. This is one of the best-equipped shops in the Southeast.

The past season from the standpoint of plane sales was a disappointment to the operators of the Winston-Salem airport, but this fact does not worry Mr. Poindexter, who believes that this phase of their business has been neglected through the lack of salesmanship.

"It's FARE---Not FEAR"

(*Continued from page* 14)

ther, our sales department expresses its confidence that it can sell that number of ships during that period and at those prices. Gentlemen, I move that we authorize the expenditure for the purchase and installation of this equipment."

We have a whimsical belief that the day this happens somebody is going to get lined up to sell some airplanes.

One more possibility is that low ship costs may come sneaking in from the bottom via the glider route rather than graciously down from orthodox production. Along with some others, this gentleman that our young and utterly hopeless refers to as the chicken hawk's big gliding brother, Frank, is showing mighty attractive possibilities for this cheaply purchased, cheaply and safely operated craft; and it is mighty easy to visualize a normal evolution of this powerless glider into a low powered ship with many of the characteristics of the glider, thence step up into the bigger fields with a pronounced influence on price changes.

And here we stand. The better part of a year of dependable operation of wide flung transport lines has shown pretty definitely and conclusively that people will fly if the price is in line with that charged for other forms of travel; and it is believed, but not yet proven, that they will be willing, in substantial numbers to pay a reasonable premium for the faster and infinitely more pleasing travel in ships.

It is quite generally conceded that air service cannot be sold at the same price as train service as long as airplanes cost four or five thousand dollars a seat. It is also quite generally conceded that ground facilities adequate to handle dozens or hundreds of ships cannot be charged in full to the initial one, two, three or four, and that the degree of elaboration believed necessary a year ago when a certain class of patronage that did not materialize was expected is in excess of the economic demands of the present situation.

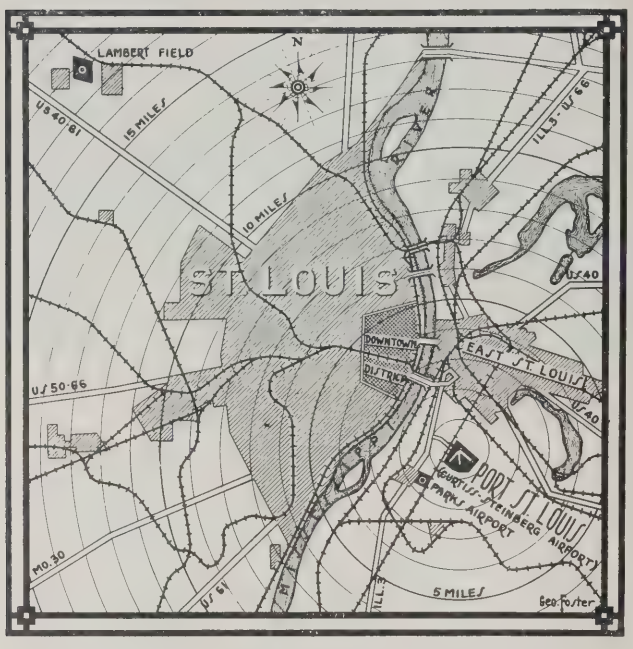
Too, it has been shown that smaller personnel than that earlier considered as essential by some will answer the needs of the service, and that some reductions may be anticipated in the pay of individuals, but this item has probably been emphasized beyond its comparative values on account of being the only one amenable to quick and somewhat spectacular attack. By and large, there may be said to be a few too many executives with whom execution should begin, like charity, at home; but there must always be somebody to attend conferences or else somebody may have to stop work to go.

Aviation is here to stay and to grow if it follows the course of older forms of transportation, but, in common with the rest, it must depend upon economics instead of romantics for its success.

Here is one form of transportation over twice as fast as any produced before; and one which has been developed to a degree of safety almost comparable to any known system, and is growing safer month after month. Further, we have considered for years that it was the pleasantest way in the world to travel, and that the traveler could see more and learn more than in any other form of travel. We have discussed this phase in rather unobtrusive fashion with nearly everybody we have known to have traveled this way much, and have found that our opinion seems to be supported by that of the majority of those who have traveled by airplane.

Just the angles or the speeds which its development will take during the next few months, the deponent saith not—for the simple reason that he saw so many A-1-A prophets go haywire last year.

The Curtiss-Steinberg



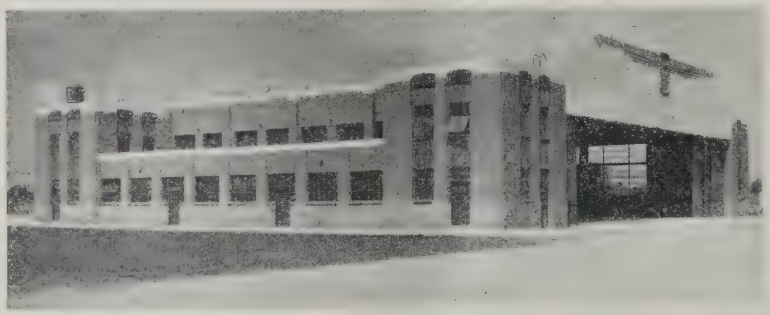
This map shows the location of the new airport, only six miles from the center of the city

Private Capital Developed This New Airport, Which is but Six Miles from the Center of St. Louis

THE average flyer is getting both weary and leery of pretty architect's perspectives and engineer's maps showing how this or that airport will look if and when it is completed with all of its runways, hangars, hotels, swimming pools, flower beds, et cetera; for a lot of the boys have gazed in rapt admiration at the pictures and then have flown over to set down in a pasture with only a few thousand dollars spent on it for its "initial development."

The writer is willing to take an oath that the Curtiss-Steinberg Airport in East St. Louis does not fall in that category; but that each little thing shown on the map means that the particular thing which it is supposed to represent can be found on the ground. For instance, the little half-round dingus on the nearest corner of the nearest hangar means that there is actually a four million candle power arc flood light at that point, while the little stars with "R" or "W" actually indicate either red obstruction or white border lights now in place and doing business, and so on through the list.

Briefly, here is an airport with 290 acres of thoroughly drained, graded and seeded landing space inside of the boundary lights, together with about 280 acres more around the borders for approaches, buildings and other attendant facilities. At the present time the runways, aprons, roads, parking spaces, hangars, repair base, restaurant and all of the other things shown on the map incorporated herein are in actual service and an orderly plan has been adopted for future extensions.



Typical hangar at Curtiss-Steinberg airport

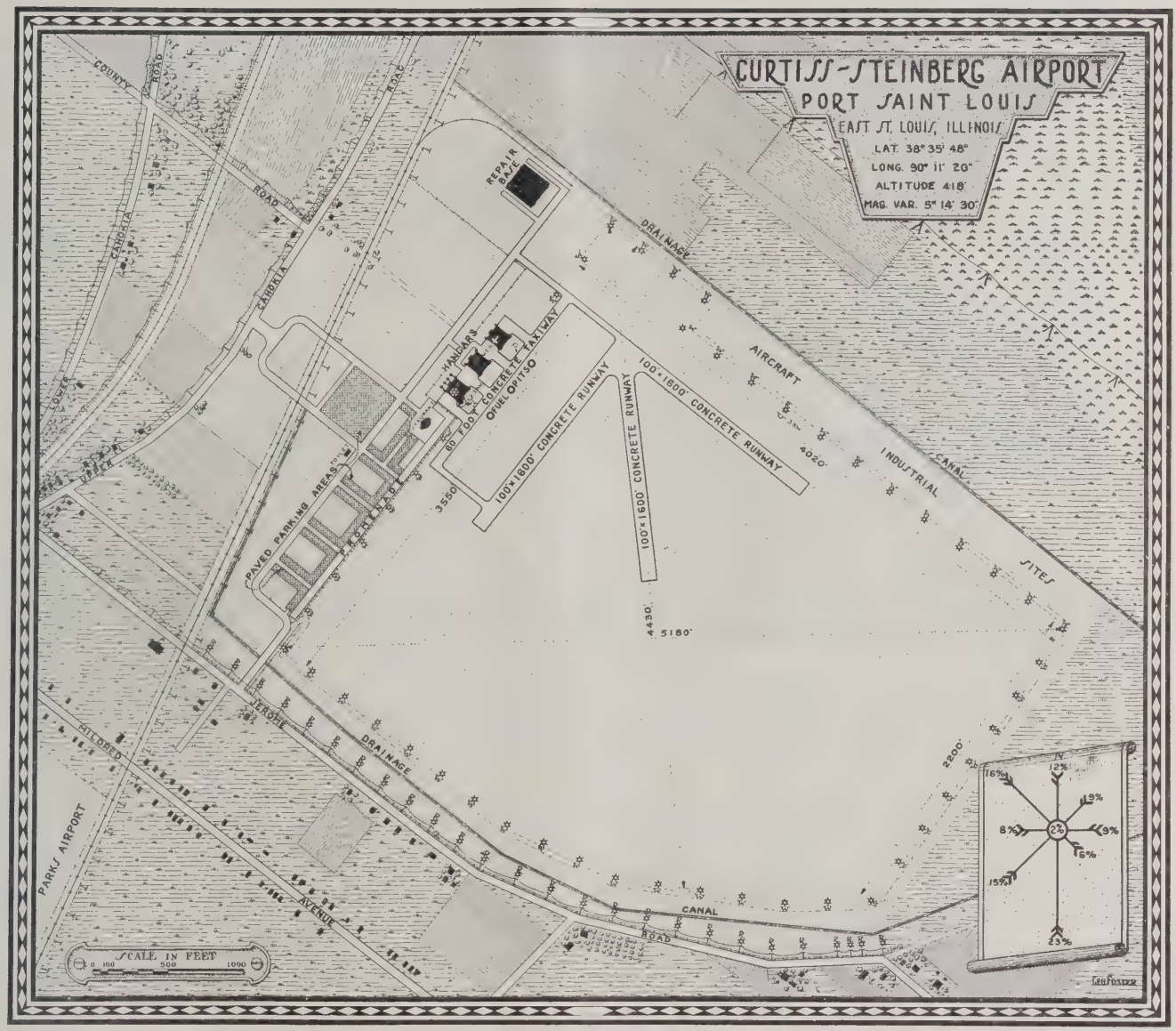
The details of engineering and construction were too numerous and involved, and of actual interest to too few people to admit of discussion here. The engineers and the architect on the work were Love-Sultan Inc., of St. Louis, Stone & Webster, of Boston, and Kenneth Franzheim, of New York, and the writer is sure that any inquiries addressed to any of them regarding design or construction will receive prompt and courteous attention.

To the writer, the big thing about this whole project is not found in its details, but in the fact that private capital invested a cool two million dollars in round figures in an airport in, or near, a city which also has a very excellent municipal port costing about the same figure. Somehow an expenditure of millions of municipal, state or federal funds for highways, rivers, harbors, airports, or what have you, doesn't carry any too great a conviction of the economic desirability of the expenditure; but when private capital starts spending on this scale it begins to appear that there may be something to it.

The project as a whole promises to give reasonably accurate answers to two mighty important questions: Can a privately owned and operated airport built and maintained to the highest possible standards compete with a municipal port of generally parallel standards? And how great an asset is comparative nearness to the heart of the business district?

This new port is approximately but one-third as far in both distance and highway travel time from the center of the down-town district as Lambert Field (the municipal port). In mileage Curtiss-Steinberg is about six miles as against eighteen for Lambert, while the time is approximately fifteen minutes against forty-

$2,000,000 Airport



It's not just another pretty map. Every detail on the drawing represents a completed development at the new Curtiss-Steinberg airport in St. Louis

five. Curtiss-Steinberg is brand new while Lambert is a comparatively old port, and as such has drawn to itself a practical local monopoly of both transport and private flying, together with the national guard unit, two good schools, and two factories (Ryan and Curtiss-Robertson).

As this is written, Universal, Safeway, Transcontinental Air Transport and Robertson are all operating their transport lines from Lambert, while the United States Airlines are operating from Curtiss-Steinberg; however, by the time this is printed the Transcontinental will probably be over at the latter port. Of course, the Curtiss-Wright Flying Service with its usual complement of schools, charter, photography, sales and service is located at Curtiss-Steinberg; in fact, is the lessee from the Curtiss-Wright Airport Corporation, the owners.

This whole project was initiated by a group of St. Louis men headed by Mark C. Steinberg, a very well known and able investment banker. This group assembled the property now included in the port and then sold a part interest in the project to the Curtiss Flying Service, and an equal part to the Transcontinental. Subsequently, with the entrance of the Curtiss Airports Corporation into the picture, the development of the various allied interests in the Curtiss-Wright group, etc., the project was purchased and completed by the present owners on a somewhat more pretentious scale than had been contemplated for immediate development by the original group.

This development has taken something in excess of a year. In April of last year the area was a discouraged looking hodge-podge of corn fields and

swamps, over half of which were under the level of the Mississippi River when it was in flood. True, it was behind levees that kept out direct overflow, but it was without pumping facilities to throw out seepage and local rainfall at such times as a high river cut off outfall drainage through the flood gates. During the year an inner canal and levee with a privately owned pumping plant have been installed around the field, something over sixty miles of sub-surface tile drains have been laid, and over a quarter of a million yards of earth have been moved to level the ridges and fill the swampy swales until now as sweet an airport as can be found in the country has been constructed with its hangars and runways in honest view of the windows of the high office buildings of the down-town district.

As stated earlier, the big question is that of the comparative value of such a location as against one already established much farther from the heart of the downtown district. The writer's hunch is that the very large bulk of the transport operations, together with those of privately owned ships used principally for business purposes by firms or individuals operating in the downtown district, will gravitate here, or to some other as yet undeveloped close-in field; while privately owned ships used primarily for sport or pleasure will go to Lambert or some other field west of the city. For those who are financially able to own and operate ships as they now drive their own automobiles, live in the west side of the city—or even west of that in surburban districts—and may be expected to keep their ships in ports west of town, both nearer their homes and where they can be reached without driving through downtown traffic congestion.

Additional Sources of Revenue

There is one other factor, or point of view, underlying the initial development of this new field that is very interesting, to the writer, at least. This is the inbuilt recognition or belief that this whole industry is still in its "show-man" stages, and that substantial revenues will be derived for some time to come from those attracted by the spectacular or novel aspects of flying. For example: the large paved areas prepared for automobile parking at so much per car; the rather elaborate restaurant and catering facilities; tennis courts, childrens' playground, clock golf, trapshooting range, and other attractions under discussion but not yet constructed to draw potential customers for ships and rides to the port, while at the same time adding to the gross revenue.

All in all, we are still going to school in the whole industry, and we believe many of the things that we do believe because we want to, rather than because they have been proved out. However, here is one case where we can get some fairly definite information on three certain phases of port development and operation: ability to make money on a highly developed privately owned port in practical competition with one publicly owned; the comparative advantages of close-in ports as against those located farther from the center of the commercial districts of cities; and the direct and indirect revenues to be derived from parking, catering and other concessions on a metropolitan port.

Increase in Passenger Rates

AIR passenger rates, declared to have been pulled down to approximately the level of rail-pullman fares, to "discover whether the American people are kept on the ground by fear or by expense," are on the upgrade again in the South.

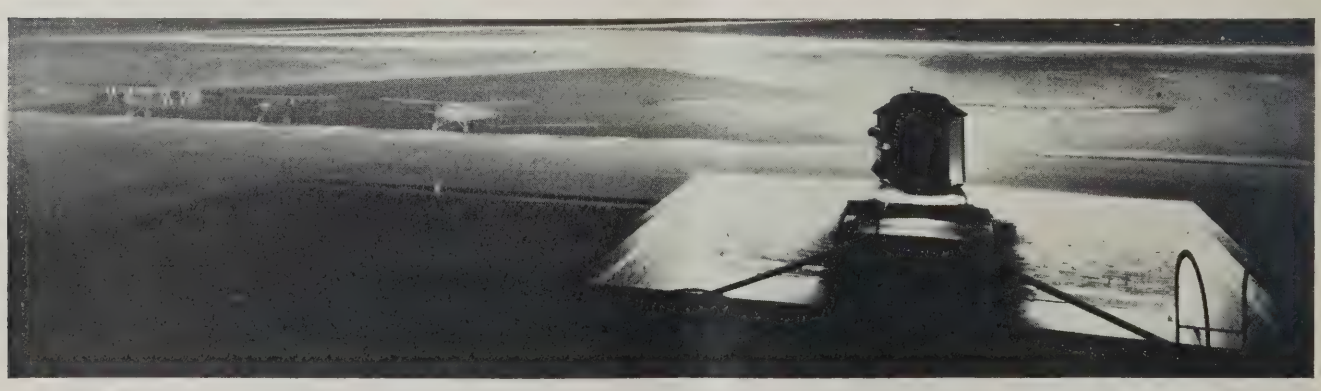
Announcement from New York that T. A. T.-Maddox would establish a rate of seven cents a mile, was followed by announcement of a similar rate by Southwest Air Fast Express.

While Southern Air Transport did not meet the "Safeway" raise, effective Sunday, June 15, C. R. Smith, general manager of S. A. T. at Fort Worth, Tex., said that the increase was inevitable.

Fred Hetherington, representative of S. A. F. E. at Fort Worth, said the experiment of low rates has been entirely satisfactory to his company. "We are convinced," he said, "that the traveling public is not afraid of airplanes. Even during the bad weather last winter our planes and those of other southwestern air lines, were filled and air travel has been steadily increasing since the first of the year."

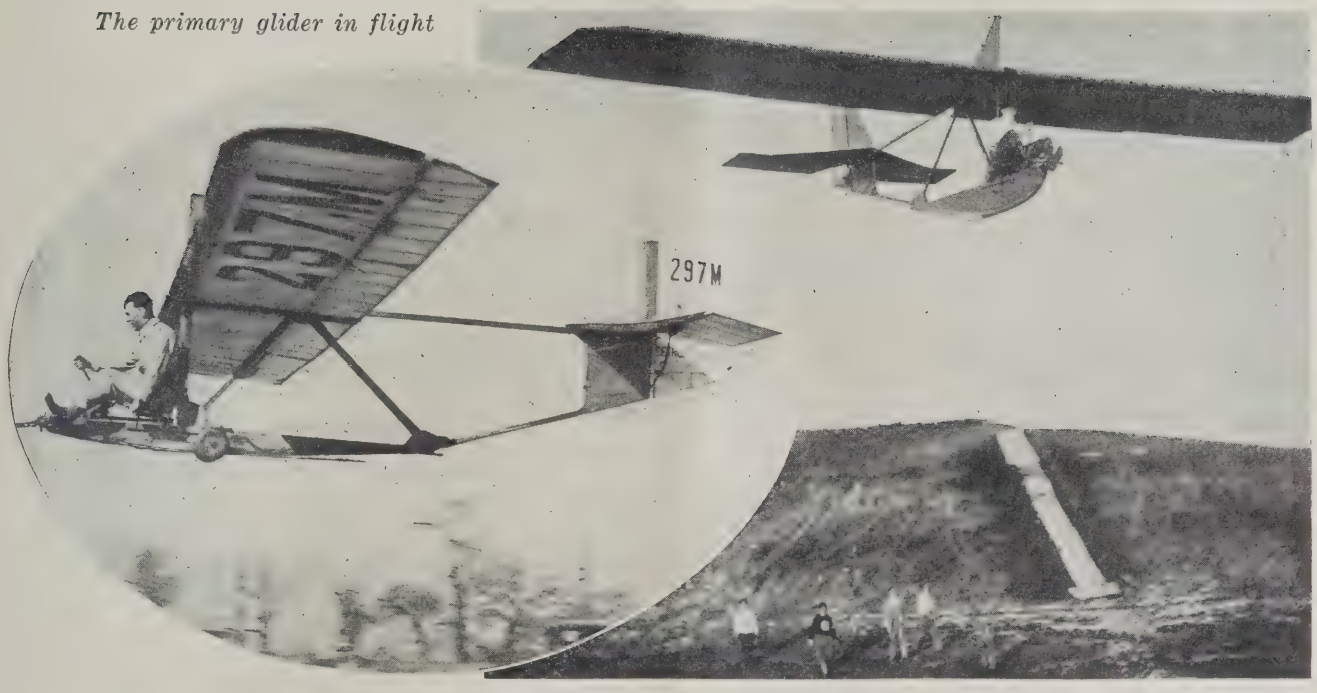
Safeway announced a new run, from Tulsa to Kansas City, coincidentally with the new rate.

The 7-cent air fare is understood to conform to an agreement reached by major passenger line operators to bring their rates to a revenue basis. The subject is understood to have been discussed during meetings in Washington, at which operators consulted the post office department on the subject of new mail contracts.



A portion of the Curtiss-Steinberg Airport illuminated by a 4,000,000 c. p. arc light

The primary glider in flight



It's the Most Fascinating Sport

So Widespread is the Appeal of Gliding That at Least One Million People Are Expected to Take Up This New Sport by 1932

By James Work

Vice-President, Detroit Aircraft Corporation

POLO and horse racing have always been known as the sports of kings; baseball has been called the sport of the people; hunting and fishing, the sport of the sportsman; and now, there is a new sport that is fast wedging its way into the hearts of all classes—that is the sport of gliding, or flying by engineless aircraft. It is my prediction that by 1932 there will be at least one million people who will have taken up this new sport.

Aircraft schools have either included or plan to include, in their courses, the flying of this craft.

Due to the limitations of the Treaty of Versailles, gliding has had more development in Germany than anywhere else: Over 200,000 Germans of all ages have joined glider clubs. Over 3,000 boys of grammar school age have been instructed in the handling of this craft, and it is quite surprising and very interesting to see the efficiency with which these little fellows fly over the German hillsides.

About 150 contestants were entered in the International Motorless Plane Meet held in the Rhoen Mountains last year. With noiseless, birdlike ability, these gliders swooped and soared over the hills, some staying up for many hours.

Without a doubt, gliding is the most efficient method of primary training for the young man who intends to become an airplane pilot, because it teaches him rudiments of flying which otherwise can be learned only after many hours of flight in the motored craft. I predict that within a short time all student pilots will be required to be efficient glider pilots before being allowed to advance to powered craft. Nearly all passenger transport lines in Europe today require all pilots to be licensed glider pilots, and the sooner America sees the benefits of this law and introduces a similar one here, the sooner the human element hazard in accidents will be reduced.

We in Detroit Aircraft are so certain of the benefits of gliding to the students as well as to those who fly gliders as a sport, that we have agreed through our Gliders Division to build the primary type at factory cost, in order to promote their use and bring the price within the range of the cheapest motor car, so that persons of nominal means, or members of the small glider club, can afford them.

Unlike motored aircraft, there is no great engine noise to reflect the power of the craft and to disturb the nerves of the student pilot; the great speed that must be acquired before his craft leaves the ground need not be feared; there is no array of intricate instruments to watch, nor a throttle to regulate, for the glider leaves the ground noiselessly at a speed of from 20 to 25 miles per hour and the student can concentrate entirely upon maintaining

stability and balance. When once the craft is in the air on the short instruction flight, the stick is pushed slightly forward from neutral and the glider settles itself to a graceful shockless landing. After a few of these short flights the student can then easily manipulate the controls, banking and turning similar to the manner in which the engined ship is handled.

By instructing student pilots on gliders as a preliminary feature, many hours of their instruction time in ships are saved, and the student is "soloed" sooner.

Gliding, properly conducted and under the instruction of those who are efficient, is without a doubt the safest means of flying, but it certainly should not be attempted without proper instruction.

Over 800 flights were made last summer near Cape Cod without one student being injured, and in

Miss Amelia Earhart, of trans-Atlantic fame, ready for a flight in a primary glider

one week, at the University of Michigan, 150 people, seven of whom were girl students, came to a safe landing after hopping off the long hillside.

At the International Aircraft Show held recently in St. Louis, there were over 200 people who flew our demonstrator glider without an accident. Most of these however, were licensed pilots, although the majority of them had never before flown a glider. Prominent among them were J. E. Boudwin, Chief Inspector of the Aeronautical Branch of the Department of Commerce; Paul Collins, former air mail pilot and more recently superintendent of the Transcontinental Air Transport, Inc.; John Collings, former chief test pilot for the Ford Motor Company; Wiley Post, pilot of the Lockheed Division of our company; Mrs. Herbert Fahy, who was an entrant in the transcontinental race for women of the National Air Races last year, and many others.

Miss Amelia Earhart was the first woman in the United States to fly a glider, and the sport has been accepted by such other well-known men and women of the air as Colonel and Mrs. Lindbergh; Captain Frank Hawks, who made a transcontinental glider flight; J. Wesley Smith, of Philadelphia, Governor Trumbull, Senator Hiram Bingham and Phoebe Omelie.

There is quite a distinction between the primary, or training glider, and the soarer, or the one used for soaring, in that the latter rises on the upward current of air higher than its starting point, then descending is flown to another upward air current until the pilot wishes to descend. In the former, the glider "slides down hill" to a point lower than where the take-off was made.

Very often the novice, after a few short flights, can qualify for a third class glider pilot's license in the National Glider Association, which requires that the glider remain in the air 30 seconds after taking off from a hillside.

Controls on the soaring machine, as on the primary one, are similar to those of motored craft. They include the stick, or control lever of the elevators and ailerons, and the rudder bar. In some of the later model soaring machines, an adjustable stabilizer is installed to allow for the difference in the weight of the pilots. All controls are manipulated the same as those on airplanes.

A one-minute flight that includes a complete "S" turn, or one to the right and left, earns for the student a double bar, or second class license in the Association, and a soaring flight for at least five minutes gives him the "three star" or first class pilot's license.

There are at this time several first class glider pilots in the United States, two of whom are graduates of the Rossiten School in Germany. Foremost among these are Colonel Lindbergh, Capt. Hawks, W. H. Bowlus, W. Klemperer, Lieut. R. S. Barnaby, U. S. N., Phillip Allen, of Boston, and John E. Pratt, now chief demonstrator of our Gliders Division, the latter two recently returned from Germany.

It must be remembered that the Wright Brothers were the first men to fly in any sort of heavier-than-air craft, and it was only after their successful flight in the engined plane that gliding took the so-called "back seat" and was not developed until recently.

With the growing interest in this new sport, the $2000 prize offered by Edward S. Evans, honorary president of the National Glider Association, for a continuous 10-hour glider flight will soon be collected, and before the end of the year I believe that the United States will surpass the activities of the people of Germany and the record of over fourteen hours, now held by Herman Dinort, will be surpassed by a pilot of our own country.

Stinson Reports Record Airplane Shipments

May shipments of the Stinson Aircraft Corporation were 54.6 percent greater than April of this year, William A. Mara, vice-president, announced recently. Fifty-one planes were shipped in May against thirty-one in April.

June production schedule called for 75 planes. The Stinson factory is now working at capacity, with overtime in several departments, Mr. Mara reported.

News of the Southern AIRPORTS AND AIRWAYS

Wedell-Williams Extend Service to Ft. Worth

THE Wedell-Williams Air Service announce the extension of their passenger line to Ft. Worth. They have been offering for the past several months, excellent passenger and express service between New Orleans and Shreveport, and it was felt that the steady increase in business justified the purchase of additional equipment, and extension of the run to Ft. Worth, thus linking by direct air service three of the South's principal cities.

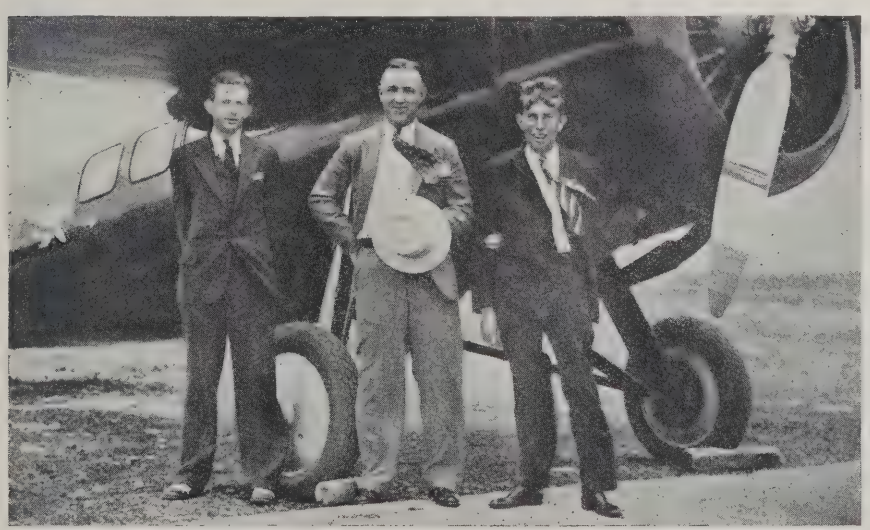
The plan is to continue the present daily run from New Orleans, making regular stops at Baton Rouge and Alexandria, and to add the through service to Ft. Worth, with Shreveport and Dallas as the only stops, except to discharge and receive Dallas-Ft. Worth passengers at the other points mentioned. This would offer two planes daily each way between New Orleans and Shreveport, and one daily each way between New Orleans and Dallas-Ft. Worth.

The new equipment for the through run consists of three seven-place Lockheed Vega cabin monoplanes, powered with Pratt & Whitney 420 H. P. motors, capable of a stop speed of 180 miles per hour and with cruising speed of 155 miles. In addition to their speed, these planes offer every possible comfort—individual upholstered leather chairs, arm rests, overhead reading light, ample leg room and unusual steadiness.

In a test flight made over the route at cruising speed the time between Dallas and New Orleans was three hours and sixteen minutes, which permits an easy schedule of four hours for the run, and will make this the fastest daily scheduled passenger run in the United States. The fare of $38.50 to Ft. Worth compared with $26.70 rail and Pullman, is very low when time and meal saving is taken into consideration. A plane to plane change at either Love Field, Dallas or Meacham Field, Ft. Worth, offers an excellent connection with S. A. F. E. for Wichita Falls, Oklahoma City and Tulsa, making it possible to leave New Orleans or Tulsa in the morning and arrive at the destination before six o'clock.

The first plane flown over the line was piloted by James R. Wedell, operating head of the Wedell-Williams Air Service. His passengers included Capt. William T. Ponder, Fort Worth, and Van Lear Leary of Shreveport, La.

A new daily passenger service between Amarillo and Hobbs, N. M., has been inaugurated by Western Air Express. The service is maintained in 6-place cabin ships.



Left to right: Van Lear Leary, Capt. W. T. Ponder and James R. Wedell, who made the first trip over the New Orleans-Fort Worth line

Delta Opens Atlanta-Birmingham Service

AIR passenger service between Atlanta and Birmingham was opened by the Delta Air Service, June 18.

The opening of the Atlanta-Birmingham line will enable passengers from Atlanta to travel as far as Fort Worth over the Delta system. The Delta lines have been in operation from Birmingham west to Fort Worth for nearly a year.

Rates over the Delta system are figured on a basis of 7 cents a mile. The fare between Atlanta and Birmingham will be $9.95. Planes will leave Atlanta each morning at 8 o'clock, arrive at Birmingham at 9:30 and Fort Worth at 5:45 p. m. The Delta planes stop at Tuscaloosa, Jackson, Monroe, Shreveport, Tyler and Dallas. The same Model J-6 Travel Air planes that have been in use over the line since its formation will be used on the Atlanta-Birmingham route.

Headquarters at Candler Field have been established at the Gulf Coast Airways hangar. Lee Sanders, divisional manager for Gulf Coast Airways will handle reservations and provide storage space for the Delta planes in Atlanta. Tickets will also be on sale at downtown hotels and a downtown office probably will be established soon.

Air Marking for 900 Florida Towns

Before fall Florida will be well marked aerially, if plans under way by the State Board department and the Aviation Bureau of Florida State Chamber of Commerce hold good.

B. M. Duncan, of Tallahassee, has said that the State Road Department was ready to participate in marking of highways according to suggestions of the Department of Commerce. This will include the marking of about 900 cities and towns throughout Florida.

Markings will be in chrome yellow, 14 feet high on the 16-foot roads, with indicating arrows showing the direction of the towns.

Interstate Planes Now Fly 2,072 Miles Daily

Planes of the Interstate Airlines, which fly at night between Chicago, Terre Haute, Evansville, St. Louis and Atlanta, and between Nashville Chattanooga and Atlanta during the day, flew a total of 59,456 miles during the month of May, according to announcement from the company's headquarters office at Tennessee's Sky Harbor, near Nashville.

Night routes flown by the company's air mail planes total 1,660 miles daily, while the day shuttleline totals 422 miles daily, making a grand total of 2,072 miles flown by Interstate every 24 hours, it was said. Nine pilots are employed on the regular mail routes, while another is stationed at Tennessee's Sky Harbor for training students in the flying school operated there.

An increase in air mail poundage of more than 50 per cent since the start of night operations on the Chicago, St. Louis, Atlanta line is shown in the recent report made by Interstate officials. At the same time, an unusual record for completion of scheduled flights has been maintained by the company's pilots, the average for May being 92.12 per cent; April, 92.68; March, 93.77; February, 95.74, and January 86.36 per cent. This is regarded by airlines officials as an exceptionally good record, it was said.

30% of S. A. T. Passengers in May Were Women

Of the 2,207 passengers carried in May by Southern Air Transport, 30 per cent were women, according to figures furnished by C. R. Smith, Fort Worth, Tex., general manager of the company.

The average distance flown by passengers during the month was 300 miles. "Second section" planes on various lines of the company have been frequent due to over-selling of accommodations incidental to increasing travel.

During May Southern Air Transport ships flew 1,336 hours and brought the scheduled miles flown by the company to three and a half millions.

The company's fleet used 82,000 gallons of gasoline a month. Consumption included the 80-to-90 gallons an hour consumed on the trimotored Fokker line from Dallas to Cleveland.

With the exception of the Dallas-Fort Worth-Houston line, with a percentage of 86.8, all lines of the company averaged better than 94 per cent completion of scheduled trips in May.

Proposed New Line from Cleveland to Atlanta

Application for an air mail permit has been made to the United States postoffice officials by the Mercury Airlines, of Cleveland, to operate an air mail, passenger and express line between Cleveland and Atlanta via Wheeling and Huntington, West Virginia, and Knoxville, Tennessee.

The company expects to start passenger and express service within the next thirty days, it is reported.

THE world's record for traveling as a paid passenger in airplanes is claimed by Walter G. Tschudin, an official of the Sinclair Petroleum Corporation in Mexico City. Mr. Tschudin claims to have paid to ride 37,612 miles in airplanes in Mexico since 1925. It is said that this is a record for such travel in any one country.

The route for the airline as set forth in the application for the mail-carrying permit is as follows: Cleveland, municipal airport; Akron, municipal airport; Canton, McKinley airport; New Philadelphia, Ohio, Schoenburn airport; Wheeling, West Va., Scott Field; Parkersburg and Marietta, Ohio Valleys air field; Charleston, West Virginia, West Virginia Airways; Huntington, West Virginia, Huntington airport; Knoxville, Tenn., municipal airport; Atlanta, Ga., municipal airport.

Tentative plans of the Mercury Lines call for both night and day flying.

Air Taxi Service to Virginia Beach

Air taxi service for week-end sojourners at Virginia Beach has been inaugurated between Richmond and the Ocean resort by the Richmond Air Transport, new operators of Byrd Field, Richmond. A six-place, 300-horsepower Ryan brougham purchased especially for the service will be used for three flights Saturday, two Sunday and one Monday.

Ponca City Airport Opened July 4

Maj.-Gen. James E. Fechet, chief of the army air corps, was the principal speaker at the dedication of the new Ponca City, Oklahoma, municipal airport on July 4.

A three-cornered race, beginning and ending at Ponca City with stops at Tulsa and Oklahoma City, was one of the features of the new field's opening. This and other races on the program were sponsored by the National Aeronautical Association.

Application has been made for an A-1-A rating for the port, this being based upon the fact that all requirements have been more than complied with. The field's hangar is 106 x 120 feet, the field itself having an area of 500 feet more than that required by Department of Commerce specifications, and ample facilities of all kinds already are installed at the port.

Clarksville, Tenn., Airport Opened June 17

The Clarksville airport at Clarksville, Tenn., was formally opened June 17 with a flying circus which was attended by planes from New Orleans, St. Louis, Louisville, Chattanooga and Nashville, and about 8,000 people.

The dedication ceremonies, which opened with an address of Robert H. Baker, Commissioner of Highways and Aeronautics for Tennessee, in which he accepted the new field for the State, included many features of entertainment and thrills. Formation flying by the National Guards, a dead stick landing contest, bomb dropping contest, balloon strafing contest, glider demonstrations by the Tennessee Glider Association, stunt flying by army and commercial flyers, cabin plane races, etc., were among the activities of the day. John F. Outlaw is in charge of the field.

Kansas City-Brownsville Airline Projected

Ray G. Sparks, general manager of International Airways Corporation, announces that service will be started soon on a passenger airline between Kansas City and Brownsville, Texas, with stops at Oklahoma City, Dallas, Fort Worth and San Antonio. Seven-place ships will be used, Sparks said, and planes will leave Kansas City and Brownsville each morning.

Airline Officials Fight Gasoline Tax

AIRLINE operators, flying into and out of Oklahoma, will carry their fight against the payment of the four-cent state gasoline tax to the Oklahoma Supreme Court, it was decided at a recent meeting of airline representatives.

The test case is considered of prime importance by airline operators, not only for the state of Oklahoma, but for all other states of the nation now collecting a tax on gasoline used for aviation purposes. It is pointed out by airline operators that several states have either already nullified the tax or refunded it to airlines by a rebate system.

"Apparently, our only recourse in the matter of tax on aviation gasoline used by airplanes operating strictly within the state, is to go before the next session of the state legislature and ask that the present gasoline tax law be amended to exempt all gasoline used in airplanes," said one of the leading airline operators, who added that this step is being taken only for the relief of air transport lines engaged in interstate commerce.

"Obviously, it is unfair to tax such gasoline when the vehicles consuming it make no use whatever of the state highways. I am sure it was not the intention of the law to impose a burden upon aviation, but at the time the law was devised aviation was scarcely in the picture, and therefore no one could anticipate the great strides it was to make.

"If we are successful with our action in the supreme court, the lines will be given instant relief from the present four-cent tax. This will take a big load from their shoulders, for relief from the tax in Oklahoma and other states, together with air mail contracts that the federal government will award under the terms of a recent act of Congress, will place them on a solid foundation and we will see an expansion and growth in air transportation without parallel."

Lines represented at the meeting included the Southwest Air Fast Express, Western Air Express, Southern Air Transport, United States Airways, National Air Transport and Transcontinental Air Transport.

New Airline Between Tulsa and Memphis

The Oklahoma Short Line Airways have begun a regular daily schedule from Tulsa, Oklahoma, to Memphis, Tenn., through Fort Smith, Hot Springs and Little Rock, Ark., it is announced by L. H. Adkinson, president of the line.

The plane leaves Tulsa at 3 o'clock in the afternoon, Fort Smith at 4 o'clock, Hot Springs at 5 o'clock, Little Rock at 5:15 o'clock and will arrive in Memphis at 6:30 o'clock. Returning, the plane leaves Memphis at 8 o'clock in the morning, Little Rock, 9:15 o'clock; Hot Springs, 9:30 o'clock; Fort Smith, 10:30 o'clock, arriving in Tulsa at 11:30 o'clock.

Hourly weather reports by radio and teletype, to guide flyers and observers in stations along air lanes throughout the entire southwest, are now available with the opening of an aerological station at Love Field, Dallas, July 3. Auxiliary stations will also be maintained at Houston, Fort Worth, San Antonio and Galveston, it is stated.

Daytona Beach, Fla., was placed on the night service of the New York-Atlanta-Miami airmail route, when the new, modern airport was opened there in May. The Daytona Beach Airport is a well-equipped field and all mail services are being given the city.

Airmail Rate Reduction Sought in Mexico

Because the Mexican government experienced a deficit of some $10,000 in the operation of the air mail service last year, officials of the Post Office Department and Ministry of Communications and Public Works are holding a series of conferences to consider the proposition of reducing air mail postage on all classes. First class air mail was recently cut from 17 1-2 cents to 10 cents per 20 grams.

According to an official announcement of the Post Office Department, 1,445,233 pieces of matter were carried by air mail during 1929. This correspondence weighed 52,398.445 kilos and the public paid 425,382.52 pesos (approximately $212,691.26, U. S.) to have it transported. The transportation cost to the government, however, was 446,180.38 pesos, leaving a deficit of 20,797.86 pesos (about $10,399).

Standard Baggage Policy on American Airways

A standard baggage policy has been adopted by Southern Air Transport and associated American Airways lines. It fixes on all single motor ships a maximum of 50 pounds, 30 pounds free allowance and 20 pounds excess, without exceptions. Exceptions to the regulations on trimotor Fokker ships (Dallas to Tulsa and Tulsa to Kansas City) may be arranged with the field manager.

Capt. F. G. Hingsburg, Washington, D. C., chief engineer of the U. S. Airways division, Department of Commerce, visited Fort Worth and El Paso airports early in June. G. C. Miller, Fort Worth, engineer in charge of the division office, said the visit had no significance as to future designation of airways.

Part of Southern Air Transport's fleet of mail and passenger planes in front of the S. A. T. hangar at Love Field, Dallas, Texas. The square building in the center is the Southern Air Transport passenger station and operation headquarters.

Leading Transport Lines Increase Rates

CLOSELY on the heels of announcement by T. A. T.-Maddux Air Lines that fares on these routes would be changed to a basis of 7c per mile came the statement by F. G. Coburn, president of American Airways, Inc., transportation subsidiary of The Aviation Corporation, that fares of that system would be adjusted to a similar basis effective July 1.

"This action is necessary," he said "not because of lack of patronage, for our planes have been necessary frequently to request passengers to postpone trips until the following schedule, especially since the drastic fare reductions—from 10c and 11c per mile to 5½c—made in January of this year.

"The new basis, we believe, will permit us to come nearer breaking even, and we do not anticipate any material falling off in the number of passengers carried. It is entirely possible, with flying conditions throughout the country as they are during the summer montss, the large amount of vacation travel, and the increased familiarity with plane travel that has been brought about through low fare experiments, that it will increase.

"This is borne out by experience on two of our lines. Colonial division's New York-Boston route has been doing a fine business on a fare of 8 1-2c per mile, and when Embry-Riddle, operating between Chicago, Indianapolis and Cincinnati, slightly increased its fares on May 10, the business still continued its steady growth.

"While the increase is not substantial to the individual traveler, the amount in the aggregate will be material as far as our income from passenger operations is concerned. Taken in conjunction with probable benefits that all air mail operators should receive through passage of the McNary-Waters bill, which changes method of compensating transport companies for the carriage of mail, it should materially improve our ability to maintain, and perhaps expand, our service to the public."

Norfolk to Lease Site for Municipal Port

Although still in controversy, there is every indication that the municipal airport question in Norfolk, Va., is to be settled by the City leasing a 180 tract of land between the business district and Willoughby Bay to be used for this purpose.

The field, under the terns of a contract which has passed the first reading before the city council, will be leased to Edward A. Whaley, president of the Whaley Aircraft and Engineering Company, by the city under a five-year clause in which the city binds itself to spend $15,000 in making the tract suitable for an airport. In the city's lease of the property from the owner is incorporated an option to buy at the end of five years.

New Air Mail Records for E. A. T.

THE fourth consecutive monthly airmail poundage record was broken in May by Eastern Air Transport, operators of the New York-Atlanta-Miami airmail route. A total of 58,590 pounds of mail was carried in May. This was 50,000 pounds more than was carried in May, 1928, when the service was inaugurated. The poundage for February was 47,683 pounds; for March, 48,682 pounds; for April, 55,-868 pounds. Approximately 2,556,000 individual pieces made up the record-breaking poundage for May.

Passengers on the New York Special of the Southwest Air Fast Express, Inc., (Safety airlines) are now served luncheon consisting of sandwiches, coffee and dessert, at noon high above the earth between Tulsa and St. Louis. Subsequent direct connections with Trnscontinental Air Transport at St.. Louis and the Pennsylvania Railroad at Columbus, Ohio, allow no time for luncheon at the ground. This plane leaves Tulsa daily at 10:20 a. m.

A hangar to house the planes of the reserve officers training unit at Candler Field Atlanta is nearing completion. Material for the hangar was moved from Fort McPherson. Funds for establishment of the Atlanta unit were provided by the City of Atlanta and Fulton County.

New Line Will Connect 20 Oklahoma Cities

Oklahoma's newest airline, to be known as The Oklahoma Short Line Airways, expects to open service between 20 cities of the state soon, according to a recent announcement.

The line's "south circle route" will connect Tulsa with Muskogee, Okmulgee, Henryetta, Wewoka, Seminole, Shawnee and Oklahoma City.

Its "north circle route" will link Tulsa with Bartlesville, Pawhuska, Ponca City, Enid and Oklahoma City, while the "west circle route" will connect Oklahoma City with Clinton, Mangum, Altus, Lawton, Duncan and Chickasha. Daily trips both ways will be made on each of these lines.

Headquarters for the new system will be in Tulsa, with operation offices also maintained at Oklahoma City.

Mason Issues Monthly Airport Bulletin

L. G. Mason, manager of the Montgomery Municipal Airport, keeps the public informed as to what is taking place at the big airport in the Alabama capitol through a monthly airport bulletin.

In the initial bulletin, the record of sales for the present month and the previous month is given, with the total sales for the year—also passengers carried from the airport, miles flown by ships operating from the port, trips to other airports by local ships, and visiting ships registered. By a glance at the figures, one may tell what is going on at the airport. The remainder of the bulletin is devoted to current topics at the Montgomery airport.

Oil Filter Affects Big Saving for S. A. F. E.

The Southwest Air Fast Express, Inc., has gone into the separating business as a means of cutting down some of the overhead cost of operation, using motor oil in place of milk and cream, however.

A newly installed centrifuge now saves up to 60 per cent of the used motor oil which otherwise would be wasted, and this is pointed out by airline officials as somewhat of a real economy in view of the fact that the average monthly consumption of oil by the big airliners operated by this firm amounts to 80 barrels of 56 gallons each.

New Close-in Airport at Jacksonville

JACKSONVILLE has a new airport within three minutes of the central business district. The field was formally opened to the public on May 25 with dedication ceremonies, stunt flying, races and other events.

The McMullen Aircraft Company, whose headquarters is in Tampa, will operate the field. They have established a local base, with office manager, field manager, flight instructor and sales director. Capt. A. B. McMullen, president of the company, will divide his time between the two cities.

James Reed will manage the office. W. G. Stewart is to be sales manager and E. S. Hensley and Hugh Wood will divide the honors for flight instructor and field manager. Both are transport pilots. A. P. Cooke will direct the public relations for both bases of the company.

The new field is located on the south side of the St. Johns river bridge, in the heart of South Jacksonville. Mayor Taylor Harris and other city officials are pushing the project in order to make it a municipal airport. At present operations in grading, etc., are being finished by public subscription.

The field, it is planned, will be made into a combination land and seaplane base. Permission has already been requested from the government for filling in and bulkheading along the river to give additional space within the field and to allow for a ramp for seaplanes.

A 3,000 foot north and south runway is under construction and is now in use. An east and west runway extends 1,000 feet and is to be lengthened. A northeast-southwest landing strip is contemplated and grading has started.

Capt. McMullen says that with the completion of the South Jacksonville field, the city will have landing facilities closer than any other city in the South. Street cars and bus lines run within a half a block of the field and the Dixie highway runs along the east side.

Line Opened from Amarillo to Hobbs, New Mexico

A new airline has been opened between Amarillo, Texas, and the booming oil fields near Hobbs, New Mexico, the line connecting at Amarillo with the Western Air Express for Tulsa and Oklahoma City.

Daily round-trip service is offered by the new line, which is headed by Harold W. English, of Amarillo, and six-place planes have been placed in operation, the entire trip from Hobbs to Tulsa requiring less than three hours

Brower to Extend Lines to Oklahoma City

Plans for extension of the Omaha-Blackwell line of the Brower Air Service Corporation of Lindsborg, Kan., to Oklahoma City were announced recently by H. F. Brower, president and manager. Service between Omaha and Oklahoma City will be started within 10 days, Brower said.

Purchase of new equipment for the line also was announced. Brower said he was seeking the right to carry mail between Omaha and Oklahoma City.

An eight million candle power revolving beacon and a 1,700,000 candle power stationary light throwing a light toward Bowman Field will be installed on top of the Lincoln Bank and Trust Company Building, Louisville, Ky.

Fares Reduced on Mexican Lines

The two remaining aircraft companies operating in Mexico on a large scale and connecting with the United States—Corporation Aeronautica de Transportes and the Mexican branch of Pan American Airways—have reduced their passenger tariffs. The former has made average reductions of 35 per cent in passenger tariffs on its Mexico City-El Paso and Brownsville-Mazatlan services. The Pan American Airways branch has announced a 20 per cent discount until September 30 for passenger rates on its Vera Cruz City-Merida, Yucatan route.

These companies now pretty well monopolize the aviation field in Mexico after the indefinite suspension of service by Pickwick-Latin American Airways, which operated from Los Angeles to Guatemala City by way of the Mexican capital.

The State Highway Department of Tennessee has compiled an aero atlas of the state, giving information on about 100 airports and emergency and secondary landing fields.

Above is a recent aerial view of Lindbergh Field, San Diego, California. The entire landing area is surfaced with sand pumped from the bottom of the bay. Regular sprinkling with salt water keeps the sand compact and affords an excellent landing surface over the 80 acres. There is no dust or mud problem. The field is a port of entry from Mexico, being only 16 miles from the border. It is the terminus for two air passenger lines and two airmail lines. It is within walking distance of the center of the city.

NEW AIRPORT DEVELOPMENTS

Montgomery, Ala.—The War Department will soon ask for bids for construction of the first unit of the tactical school at Maxwell Field. The project, the tactical school building, will cost $150,000. Bids for the buildings are expected to follow rapidly.

Siloam Springs, Ark.—The Stateline Airport near here, which has been leased by the local commercial club, is being placed in first-class condition by the grading of runways and other improvements.

Bentonville, Ark.—The new airport of the Arkoma Airways Corporation at Bella Vista was dedicated with a program of air events on June 21 and 22.

Eureka Springs, Ark.—The local airport was dedicated July 4.

Jacksonville, Fla.—Palm Park airport on the river front here was opened May 26.

Wauchula, Fla.—Dedication of the county-city airport, located about one mile east of this city, is tentatively scheduled for September 1. The field contains 160 acres.

Moultrie, Ga.—Moultrie's municipal airport was formally dedicated July 4. The field is large enough to accommodate transport planes.

Dalton, Ga.—Dedication of the airport here has been postponed for sixty days to allow a coat of grass to grow.

Brunswick, Ga.—Plans for a joint city and county land and seaplane base on the Black River here are under way. One thousand acres owned by the Brunswick Terminal and Railways Security Company is being considered for the airport.

Atlanta, Ga.—Concrete aprons are being laid at Candler Field. The area covered will be approximately 150 feet wide and 675 feet long.

St. Marys, Ga.—A Government emergency field will be established here. The city has appropriated a sum for equipping the field in addition to federal expenditures.

Savannah, Ga.—The name "Savannah Airport" has been chosen for the new municipal field under construction here.

Glasgow, Ky.—The new airport here was formally dedicated the latter part of May with about 12,000 people in attendance. Aerial stunts and parachute jumps were part of the program. This airport is the closest one to Mammoth Cave, Ky., and is expected to become popular with visitors to the Cave.

Louisville, Ky.—A new hangar to cost approximately $100,000 is planned for Bowman Field, municipal airport here.

Jefferson Parish, La.—The Arch Construction Company has been awarded the contract for construction of a new hangar for Wedell-Williams Air Service at their airport here. Hangar is of modern design, 100 by 100 feet long, with a 20-foot wide lean-to on one side.

Shreveport, La.—New buildings to cost approximately $100,000 will be erected at the Shreveport Municipal Airport. The buildings consist of an administration building, hangar, lighting system, beacon, wire fencing, curbs, walks, aprons, concrete work and accessories.

Eunice, La.—The Eunice Airways is conditioning a 50-acre tract on the Preston Stagg place two miles east of this city for an airport.

LaFayette Parish, La.—The airport commission here has recommended that a recent offer of the Standard Oil Company be accepted for the oil and gas concessions at the local airport.

Gulfport, Miss.—The local municipal airport was dedicated June 4 in connection with the 40th annual Confederate reunion. Air mail service was inaugurated on the same date.

Meridian, Miss.—The Wright Construction Company has been awarded a contract for grading and leveling the local airport.

Columbus, Miss.—The Owen-Bowlin airport here was recently inspected by Marshall C. Hoppin, of the Department of Commerce, who outlined plans for its development.

Kings Mountain, N. C.—An airport will be constructed one mile west of here on the Shelby Road. Runways 3000 and 2000 feet will be provided.

Oklahoma City, Okla.—The attorney-general of Oklahoma has approved Oklahoma City's $425,000 airport bond issue which has been in litigation since it was voted last year.

Durant, Okla.—A hangar of ten-plane capacity is under construction at the local airport, which has recently been named Ira C. Eaker Airport in honor of its illustrous citizen, Captain Ira C. Eaker, of endurance fame.

Muskogee, Okla.—Hat Box Field, Muskogee's $200,000 municipal field, was dedicated May 26. Army planes and a dirigible from Scott Field in addition to many civilian planes took part in the dedication.

Tulsa, Okla.—Construction work will soon be started on a new administration building at the Tulsa Municipal Airport, according to recent announcement. The structure, to be known as the Air Terminal building, will cost $150,000, it is said.

Greenville, S. C.—Contract for lighting the municipal airport here has been awarded to Huntington and Guerry. A teletype system is to be installed by the Department of Commerce.

Columbia, Tenn.—The Graymere Airport, operated by the Columbia Airlines, Inc., was opened here May 29.

Lebanon, Tenn.—The Rainbow Flying Field, located on the Stone Farm, just outside the city limits of Lebanon, was opened early in June. This is the second airport to be opened in Lebanon.

Knoxville, Tenn.—Opening of the McGhee-Tyson airport here is scheduled for August 1-2. Many prominent fliers have signified their intention of attending and a contingent of army and navy planes and of the Tennessee National Guard unit will also take part in the opening.

Bristol, Tenn.—Bristol Airways, Inc., has leased the Bristol airport. W. T. Mitchell, formerly of Bluefield, West Virginia, is manager of the airport.

Memphis, Tenn.—A gravel and asphalt apron fronting the hangar line has been completed here.

Mineral Wells, Tex.—Through the efforts of the Chamber of Commerce here, an airport tract has been secured . The consideration was $11,475. The tract comprises 136 acres. The enterprise was financed by stock sales to citizens of this city.

Tyler, Tex.—Formal opening of the Tyler Municipal airport was held June 29. Delegations from several Texas cities took part in the dedication.

Amarillo, Tex. — An additional story has been added to the terminal building at English Field to take care of the field employees of Western Air Express.

Weatherford, Tex.—An emergency landing field has been opened here.

Sweetwater, Tex.—Plans for an administration building at the municipal airport here have been approved.

Harlingen, Tex.—A $150,000 bond issue has been proposed for a municipal airport.

Richmond, Va.—Construction has started on the new $10,000 hangar at the Byrd Airport here. The hangar will be used by the Richmond Air Service Corp., new lessees of the airport.

Lynchburg, Va.—The Lynchburg Flying Service has leased the Preston Glenn airport here.

Tulsa Airport Reaches 10,000 Mark

TRAFFIC records were again broken at the Tulsa municipal airport in May when 10,212 persons flew to and from the port. The Tulsa airport for the past three months led all other air fields in the world in volume of business. May was the first month in which as many as 10,000 persons arrived and departed from the field.

The S. A. T. Pilots Like Their Pets

Walter B. McAllister, pilot on the Dallas-Brownsville run of Southern Air Transport, found a goat he wanted in Brownsville, borrowed a plane and got his pretty, blond bride to go with him on his day off to get it. Mrs. McAlister supervised the goat's trip back to Dallas. It was odoriferous and obstreperous and McAlister is reported to be considering another and more sinister trip for his new pet.

Homer Rader recently ferried a Chihuahua dog to Dallas from El Paso, the end of his run. Bledsoe (Slim) Payne has a couple of canaries from El Paso and Juarez.

The S. A. T. pilots generally go in for dogs. But one collects goldfish.

Interstate Is Arranging Special Scenic Tours

Tentative plans have been made by the Interstate Airlines to fly special scenic tours from Sky Harbor, via Chautauqua lakes and Niagara Falls, to Toronto, Canada during the Canadian National Exhibition which is held in Toronto annually the last week in August and the first week in September. F. F. Frakes, Nashville representative for the Interstate Airlines, who will handle the tours, say that a trip on one of the three six-passenger Fairchild monoplanes, which will be used, will cost very little more than railroad fare, plus Pullman and dining car service, and that those who are fortunate enough to be able to take their vacation at that season will be able to spend at least three days more in Canada by using air transportation. The first plane is expected to leave Sky Harbor for Toronto on August 22 and the last will return to Nashville on September 7, with sufficient service in between to care for the demand.

The eastern terminus of National Air Transport has been moved from Hadley Field, N. J., to the Newark Metropolitan Airport. Mail passengers and express will reach New York City at least an hour earlier than is possible from Hadley Field, it is said.

Lebanon, Tennessee, Has Two Airports

Lebanon, Tenn., now has two airports, Rainbow field and Poterfield airport. The former is located just outside the city limits on the Stone Farm, and was opened the early part of June; while the Poterfield airport was opened with an air circus on June 16. Capt. R. H. Polk, of the recently organized Southern Aviation Service and Transports, is in charge of the field, which is owned by J. W. Poterfield. The newly organized Southern Aviation Service and Transports will operate passenger lines to Birmingham, Louisville, Knoxville and Memphis, from this port until Nashville has a suitable airport for this type of service, it is said.

E. P. Lott, Chicago, operations manager, and **R. E. Pfenning,** Kansas City, superintendent of operations of National Air Transport, visited Texas airports early in June. They were guests of Charles Braun, Dallas-Fort Worth representative.

Halliburton's 1000 Plane Order

(*Continued from page* 15)

patronize reliable airlines. Indeed, this price reduction, which was met by several other major airlines, did a very great deal to make America 'air-conscious,' and thousands of people have become accustomed to using airplanes in business and for all types of travel. However, we were losing money and, together with most other airlines, have recently found it necessary to increase fares somewhat in order to reduce the loss. The Safeway's present rate is seven cents per air mile, or only slightly in excess of rail and Pullman fares.

"Air transportation is the coming mode of travel. It is already here, in a large degree. Whereas it was at first considered a luxury, and later used primarily for hops of 1,000 miles or so, it is now realized that dependable air service must be provided for trips of 100 miles and even considerably less than this. Every town of 8,000 or more population can furnish sufficient passengers for at least one plane each way daily, provided the air transport companies charge popular prices. This can be profitably done when mass production and mass operation become a reality.

"When we place our contract for 1,000 transport ships and begin to get delivery of them, operations will be commenced as rapidly as is safe and practicable out of the large centers of the country, using each of these as a base of operations over a 500-mile radius. Thus we will be able to cover thoroughly a great deal of territory, much of it several times daily and in some instances hourly if business warrants, thereby utilizing to the fullest extent all of the daylight hours and having crews to care for and service the ships at night at the base headquarters for that area. Later, perhaps, when beacons or lighted airways are more generally placed throughout the country, we may do night flying also. Tulsa will continue to be the main office and headquarters of the Safeway lines, and more than 100 planes will be operated out of here daily.

"Already we have witnessed remarkable progress in aerial transportation. But the surface of the possibilities in this field has not been scratched. Within a very few years, possibly no more than five, I anticipate that the United States will be covered and served by a great and systematic network of airways, with huge airliners operating at frequent intervals in all directions on regular schedules.

"It is very probable that by then the air transport business of the nation will be in the hands of five or six major airlines, each financially strong, dependwable and entirely trustworthy. Passenger rates will be greatly reduced, the superiority of air travel in speed, cleanliness, comfort and safety will be fully recognized and as firmly demanded, and everyone will benefit by the general, all-purpose use of the world's foremost method of transportation. The Safeway airlines system is and hopes to continue to be one of the five or six major air transport companies contributing to aviation's progress."

Aeronautical Personalities

The Highlights of Thirteen Years of Flying

By Ewing Brierly

Pilot, Fort Worth-Houston S. A. T. Passenger Line

(He got the name "Cactus" Brierly a long time ago, before multi-place ships, Whirlwind engines existed; before the OX5, even before men wanted to fly bad enough to pay a dollar a minute for instruction.)

THERE were 11 of us in that class at Davenport, Ia., in 1916—ten fellows and one energetic, devil-may-care red-headed girl. We were taking time from a Frenchman at the rate of a dollar a minute, and five hours constituted a solo course.

By the time a pilot could take off and land he was considered a finished flier. If a fellow got in a spin—well, it was just too bad. I remember the first time I ever saw a fellow put a ship in a spin intentionally and bring it out again. None of the miracles of the Bible would have astounded us more.

Time was counted in minutes. Our instructor was plenty good. He had had 1,000 minutes and had a reputation as a veteran flier.

We had one plane with an old cast-iron Maxi motor and a boat that none of us ever got off the water. We used to put on our bathing suits when the boss was away and sneak down and try to fly that thing. All we ever got out of it was a ducking.

After several months of that I went to work for the Black Hawk Manufacturing Company in the engineering department. Stayed there several months, then dropped down to Austin, Texas, and got ground school. Then Caruthers Field, near Fort Worth, and had a year's training.

Out of the army, barnstorming. Traveled over Iowa and Illinois, giving many their first taste of flying.

Once, flying across country on a pitch dark night in an old Canuck, and without lights of any kind, the oil line broke and the engine stuck. All that could be seen below was a dark line that looked like a hedge. So we scooted over it and sat down. I covered my face for the crash, but it didn't come. Climbed out and got to town some way, thankful that I was not crushed to a pulp. Went out there in the morning and found that Canuck sitting in the middle of a 60 acre block as level as a table and cleared only the afternoon before of a crop of hay. It was the only tract on which a landing could have been made without a crack-up for miles around.

Ewing (Cactus) Brierly

After that a brief adventure with a flying field on the banks of Mississippi, then more barnstorming and finally a job with the Swallow Manufacturing Company at Wichita—four years of that as a demonstration pilot.

After two years with the Garver Flying Circus I came back to Texas and flew the first Whirlwind Travel Air in this section of the country.

Smooth sailing—until I got a job as a test pilot for an airplane manufacturer, whose only asset was a slick promoter. They sucked me in on that business. Not only did I get involved in a business way, but I contracted to test the crates they built.

The engineer and designer was an ex-valve grinder in a garage. He couldn't even design a baby buggy and make it run straight. But this promoter came along and wanted to build airplanes, so this fellow told him he already had three ships designed. That night he went home, got him a pencil and paper and drew pictures of three ships—two open jobs and one cabin job. The promoter was much struck with the high-powered looking cabin job, and so that was what they built. Within two weeks they had the thing nearly done.

The fuselage looked too short to me. I measured it, and, according to government provings it was 37 inches too short. I told them about it, and of course they got sore—asked me what the deuce I knew about it, and went on building it.

The first one they finished rode the air like a bronco with a cocklebur under the saddle. When you'd take it over air that was a little rough anyway, it would go wild. But it flew.

It was terrible, but the next one was worse. In fact, it almost turned out to be just too bad. The contraption was tail heavy and when I got it off the ground, she started climbing, and kept on up to 18,000 feet, or about that. Even with the stick scraping the instrument board, the nose wouldn't come down. I adjusted my parachute and made for the door. But that darn thing was stuck, jammed by the pressure, and it wouldn't come open. Then I knew I had to fight it out. I finally got a landing angle, and left the gun on enough that I settled down without falling into a spin. I got into the field that way.

After that it was an oil man I worked for. Then T. A. T. and now S. A. T. Thirteen years of it, and not tired yet.

John W. Geppert, chief instructor in navigation and mteorology for the Universal Flying School, on May 11th set a new record of one minute and 19 1-2 seconds for primary gliding at Kutchine Glider Airport. The old record is 37 1-2 seconds. For a primary glider to remain in the air over 30 seconds is considered excellent. Gliding activities are held each Sunday at the field, near Creve Coeur Lake.

Major Jim Tulley, a native St. Louisan, has been appointed manager of the new $3,000,000 Curtiss-Steinberg airport, at St. Louis.

Southern Aviator Back from Antartic Trip

CAPT. ALTON N. PARKER, a Crystal Springs, Miss., boy who made good in the air, sped homeward recently for a short visit after an 18 months sojourn with the Byrd antartic expedition. He was one of four airplane pilots on the expedition and he preceded his commander home.

Capt. Alton N. Parker, above, of Crystal Springs, Miss., was recently reunited with his family after 18 months with Rear-Admiral Byrd in the polar regions. . Mrs. Parker is mighty glad it's all over and both poles have been visited—Parker was on both expeditions.

"The expedition accomplished everything it set out to accomplish," Capt. Parker said on his visit to Memphis ,before going to his home town. He pointed to the flight over the south pole, discovery of mountain ranges and the compilating of scientific data.

"The coldest weather we experienced was 72.8 degrees below zero—and that was last July!" the aviator related. "Summer is winter down there, you know. And for four months, it is pitch dark all the time.

"Hard life? Well, not so bad. We had everything good to eat, thanks to the thorough preparations by the commander. We had radio programs. During the long winter nights we played aceyducey and bridge, read, took hikes, worked on photographic development and printing, and made preparations for the flight.

"There is little life in that country. The only living things are seals, penguins, gulls and a few other sea birds."

Capt. Parker's most treasured trophy from the anarctic is "Sky," one of the dogs, so named because "he's the limit! He is coming home on a whaler.

Following visits in Mississippi, Tennessee and New York, Capt. Parker plans to return to the marines.

Byrd's flight over the south pole was made on November 29, 1929, with Bernt Balchen at the controls. The flight required 16 hours and 10 minutes.

John Herlihy, one-time navel flier and formerly engineer for Transcontinental Air Transport, is now piloting the mail plane between Tulsa and Ponca City for National Air Transport, Inc. Herlihy succeeded Alfred F. Kalberer, who was transferred to the Chicago-Kansas City mail run.

Fred Wimberley, Fort Worth pilot, has become associated with the Garland Aircraft Corporation of Tulsa, Okla., as a salesman in Texas, Oklahoma and Louisiana territory.

W. A. McDonald, air mail pilot flying 223 miles in one hour and thirty-minutes, claims the establishment of a new speed record for an air mail plane. This record was made over the south-bound flight between Birmingham and Mobile, Ala.

Margaret Thomas has sueceeded Jean La Rene as president of the Dallas, Texas, Girls Flying Club.

A Tax Assessor Finds Relief in Flying

"PANCAKES have no place outside the kitchen and eating places," says Nora A. White, "but they were a Jonah to me in learning to fly."

Nora A. White

She is a deputy county assessor, living in Kansas City, Mo. She now has over 45 hours in the air and plans to take her limited commercial test as soon as she has enough hours. She has flown a Swallow, American Eagle, Great Lakes and other planes in her training activities. When the weather is too bad for flying, she attends ground school in preparation for her limited commercial license.

Fourteen-Year-Old Atlanta Youth Soloes

Like father, like son. Harley Fricks, son of Chief Pilot "Gene" Fricks, senior air mail pilot of Interstate Airlines, Inc., learned to fly under his father's instruction, and soloed recently at Tennessee's Sky Harbor, near Nashville, in one hour and 35 minutes. Although only 14 years old, and too young to obtain a student permit from the government, young Fricks was able to get a physicians temporary permit, and had soloed when he was notified by the Department of Commerce that he was unable to continue with his flying because he was under the age minimum.

The Fricks family reside in Atlanta, Ga., from where Chief Pilot Fricks flys the day shuttle route between Atlanta, Chattanooga and Nashville daily.

Glider Started Parks On Flying Career

A. B. PARKS, airport engineer of Martinsburg, West Virginia, has been experimenting with things with wings ever since he was big enough to drive nails and twist haywire.

When still in his early 'teens he began experimenting with gliders, which much to the surprise of his parents and the public in general actually flew. Having smashed one machine he would immediately build another, which due to unaerodynamic principles, would also smash. However, young Alex, undaunted,

A. B. Parks

kept on and by the time he gave up the attempts as being too expensive, he had nearly an hour in the air. Of course, this time was only gotten after hundreds of painful take-offs. It is interesting to note that the wings of these gliders had no camber and the dope was supplemented by varnish and thin glue. They were made almost entirely from bamboo, cotton cloth and binder twine.

On one particular flight, Mr. Parks often tells of how a certain machine that he had constructed, which later proved to be somewhat nose heavy, sailed out over the brink of a 100 foot cliff. Having lost a great deal of altitude prior to that—by the time it reached the cliff it was low enough to catch its tail structure on a fence that ran along the top of the precipice. Equlibrium was lost and the whole outfit, pilot and ship, slipped over the edge and hung there until help came a quarter of an hour later. It was shortly after this episode that Alex gave up gliding.

In 1916 Mr. Parks went to College Park, Maryland, where he learned to fly a motored ship. His instructor was an army officer by the name of Mac Gunniss. From that time on he flew steadily for pleasure alone. At about this time, Alex, as instigator and leader, formed the Berkely Aviation club of Martinsburg, West Virginia. This organization, thanks to his splendid support, later established Shepherd Field, the municipal airport, and placed it on a self-supporting basis.

At present Mr. Parks, still in the aviation game, is head of the airport engineering and designing firm in Martinsburg which bears his name.

Texas Flier Seeks New Thrills in China

In his four years of flying experience, Roy Butler, 23-year-old Jefferson City, Texas, flier, has flown a battle plane during one war, has been sentenced to death once and now he is enroute to China to engage in more fighting.

Young Butler was sentenced to death before a rebel firing squad in April, 1929, when he failed to shoot down a federal army plane flown by a companion. Butler had joined the rebel forces led by General Escobar, after being shot down while flying a federal plane.

Although he had served as a federal pilot for two months, he had only been able to collect for two days' pay, which at that time amounted to $125 a day.

On April 5, 1929, while flying with a Mexican officer, he encountered a plane piloted by "Buzz" Morrison, a chum who was flying for the federal forces. The two fliers circled each other, neither opening fire. Butler was sentenced to death at sunrise the next day, but escaped when friends intervened, and was finally released in Juraez, Mexico. Later he flew for movie companies in Hollywood.

John A. Riley, head of the United States Weather Bureau at Candler Field for the past year, has been transferred to Love Field, Dallas. E. M. Bartow has been assigned to the post formerly occupied by Mr. Riley.

R. F. Garland, president and owner of the Garland Aviation Interests of Tulsa, Oklahoma, and millionaire oil man, has been elected a member of the flying school committee of the Aeronautical Chamber of Commerce of America. The Garland Interests comprise an airport, airplane factory and flying school situated on the outskirts of Tulsa.

Gurney is Operation Mgr. for Robertson Lines

Harlan "Bud" Gurney, a prominent personality in Col. Lindbergh's book, "We", is operation manager for the St. Louis-Memphis-New Orleans passenger line operated by the Robertson Airplane Service Company.

Gurney, according to Lindbergh's own account of the matter, came to St. Louis with the future transatlantic flyer in 1923, and it was because "Bud" broke a collar bone in a parachute drop at the air races that "Slim" remained in St. Louis. Gurney followed Lindbergh as a pilot on the St. Louis-Chicago airmail route, later becoming operations manager for the old Robertson Aircraft Corporation, which held the original contract for the service. It was while he was in charge of operations that the company led all other operators in efficiency with a percentage of 99-plus.

Except for a brief period last year when he was operations manager for the Continental Airways at Cleve-

Harlan (Bud) Gurney

land, Gurney has made his headquarters at St. Louis since coming here with Lindbergh. Although holding no records, Gurney is one of the most skilled pilots in the business, and was the only flyer to get through with the pictures of the 1929 Kentucky Derby, scoring a scoop for the Chicago newspaper, which employes him for this service every year.

Gurney is not the only close friend of Col. Lindbergh connected with the Robertson Airplane Service Company. Frank H. Robertson, president of the concern, and Harold Bixby and Harry H. Knight, two stockholders, were among the backers of the trans-atlantic flight. Phil De. C. Ball, owner of the St. Louis Browns, is another stockholder.

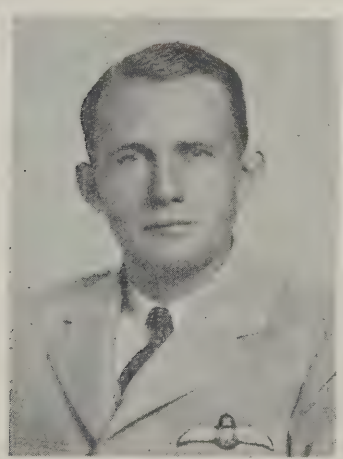
His Greatest Thrill on New Mail Route

HOMER RADER, who is now a passenger pilot on the Kansas City leg of the Dallas to Cleveland line of Southern Air Transport, was once a member of the University Flying Circus, a stunt organization, composed entirely of college men. Shortly after finishing his training at Kelly Field, San Antonio, Texas, Rader went barnstorming with this college circus. For several summers this circus toured the middle west, making all the college towns. Frequently the circus covered the same territory the second time and as successfully as the first.

Rader did a lot of stunt flying for the circus and, according to his friends, was one of the most able and daring stunt pilots in the country. Today he does not stunt. "In those days," Rader says in giving his views on the subject, "flying was all exhibition work. Stunting was a part of the game. Today flying is a serious, practical business and no pilot has a right to hazard lives by stunting."

In 927 Rader went to Cincinnati to fly a passenger line for the Embry-Riddle Company. In the latter part of that same year he took out the first plane to fly the night air mail route from Cincinnati to Chicago. On this memorable flight Rader had the experience of his whole flying career in so far as thrills and chills go. In describing this first flight, Rader says:

"I was scheduled to fly the first night mail plane from Cincinnati to



Homer Rader

Chicago. Through some slip in the arrangements, the time came to inaugurate the line and I had not been given an opportunity to go over the route. The start from Cincinnati was made so that I had only one hour of flying time ahead of me before dark.

"I started the trip with a ship powered with an air-cooled motor and had flown only a short distance when the engine blocked a valve and I was forced to return to the starting point for another plane. The only ship available was one with a water-cooled motor. With the thermometer standing at zero, I realized that if the first air schedule was to be made, I would have to use what was at hand, so I had the mechanics cover the radiator and took off just twenty minutes before dark.

"The ship I was flying had no lights of any sort—no landing lights and no lights on the instrument board. I picked up a flash light before I started but when I turned it on, it proved to be an eccentric affair that blinked and blinked for a while and finally went out altogether. Before my 'blinker' went out, I noticed my oil pressure was falling off and finally went out entirely. The mechanics had forgotten to cover the oil radiator and it had frozen. With only a four hours supply of gasoline, I might have considered landing, schedule or no schedule, but there was no place to land as far as I could see. Being unable to see my compass, there was nothing to do but wander aimlesly for one of the beacons on the transcontinental route which I judged to be somewhere to the north of me.

After flying for some time into a heavy head wind, I finally sighted one of the beacons, flashing across the sky. I managed to settle down onto the emergency landing field, just as the old engine seemed to be pounding to pieces. From the landing field, I went into Chicago clad in winter flying suit and moccasins. After obtaining another plane, I returned, picked up the mail and completed the first night mail flight to Chicago."

James Nelson, formerly with the Ford interests at Detroit, has been appointed aircraft inspector for the Southwest Air Fast Express, Tulsa, Okla.

J. A. Primm, formerly of Graham-Paige Motor Company, has been employed by Western Air Express as traffic representative for Dallas according to an announcement made by L. E. Terrell, traffic manager.

From Pounding Pavements to Patrolling the Air

Pounding the pavements has no appeal to Frank R. Schwartz, 28-year-old ex-Marine and policeman, who has just won a transport pilot's license and hopes to do his bandit-hunting in the air.

Schwartz enlisted in the Marine corps when he was 17 years of age

Frank R. Schwartz, St. Louis' Flying Cop, has graduated from Universal Aviation School at St. Louis and won his transport pilot's license. He has his own plane and hopes the police department will organize an aviation division so he can do his bandit-hunting in the air. Universal Air Lines System photo

and for the last 11 years has lived a life of adventure, four years of which has been as a member of the St. Louis police department's "emergency squadron."

Bandit hunting in Santo Domingo, Republic of Domingo, under Lieut. Frank Schilt, who recently was awarded the congressional medal for his Nicaraguan service, gave Schwartz his first aerial and police experience. Returning to St. Louis he gained his police post and enrolled in the Universal Aviation Schools.

"Air units will be an important branch of police departments in all large cities soon," Schwartz declares. "The modern criminal is not overlooking air transportation and its speed, as evidenced by reports of the traffic in liquor and narcotics. Too, increased commercial and private flying will necessitate police sky patrols for traffic duty."

Fred K. Baxter has been appointed divisional sales manager for American Eagle Corporation in Missouri, Kansas, Iowa, Nebraska, and Colorado.

An Early Experience in Blind Flying

By Louis Stone

A NUMBER of years ago I was barnstorming in eastern Kentucky, flying a Hisso Standard, taking in most of the lot sales and Fourth of July or any other exhibitions that were held in towns of 500 population and up to 1500. I could always find plenty of passengers at $5.00 per.

Hazard, Kentucky, located on the head waters of the Kentucky River, was the scene of an adventure. I had several reports on the possibilities of this little city, with its populaton of 3000, so I sent a man across the mountains to try and locate a landing field. He returned with the information that he had found a good place and that he had completed arrangements to use it.

So we loaded the plane with gas, 80 gallons, or enough for about five hours of good flying. Soon after we had started we ran into adverse winds, and flew for two hours before we reached our destination. My companion pointed out the field and I flew low to look over the ground before attempting to land.

His idea of a good place to land did not agree with mine in the least. The field was only 500 yards long and at one end was blocked off with a tree, at least thirty feet high. I spent thirty minutes looking over

Louis Stone

the place. Each time we went over it we had to fly about three miles down the valley before we could find enough room to turn; and during these maneuvers a storm came up, so I turned around and headed back for the home port.

The mountains at this point are about 1500 feet high, but a little nearer home they went up to 2500. I saw that the storm clouds were below the tops of the mountains, and there was nothing to do but go on up through the clouds and across the top of the range. Up we went until there was no question as to our altitude and then I leveled off and flew long enough to make sure that we had passed over the range.

I came down through the clouds and from then on I was lost. We had no instruments except engine instruments and an altimeter.

In all my flying experience I never saw so many mountains in the same length of time, as I saw in the next hour. There wasn't a place as large as a small garden that was not covered with trees. I must have been flying in a circle for it was only about thirty miles where I crossed the mountains to the home port.

My gas supply was just about out by this time. I figured there was only enough for thirty minutes' flying at the most, left in the tank, I began to look around for a big soft tree to land in, when the sun came out and right under me was the Big Sandy River and home.

One of the most amusing and nearly tragic experiences I have had, happened last summer (1929) during the opening days of the Huntington, West Virginia, Airport. A crack stunt flyer (Ike Stewart) was doing his stuff in a manner that has never been equalled much less excelled, when two young men visitors from the mountains came up and said they wanted to go up and do the things the stunt pilot was doing. On being informed that such a thing was impossible they still insited they wanted to fly, so I took them up and flew around to let them look over the city.

On our return a squall came up. The wind assumed hurricane proportions in a few seconds, and tossed the ship around like a leaf. Fortunately it passed quickly. The plane dropped about 100 feet straight down, then slid off and made a beautiful landing.

After my passengers had disembarked they came over to me, shook hands and thanked me for the thrill I had given them. They went away leaving me weak. Thrill? All I ever want in that line.

Photographic Mission That Nearly Failed

FOR several days we had waited for a good clear day. The vicinity around Martinsburg, West Virginia, is usualy very clear but this time Old Man Weather seemed to be asleep on the job. Dick Feller and I had a little experiment up our sleeve for some time and we were very anxious to get it over with.

Then early in March came a fine clear day. We hopped out to Shepherd Field, warmed up Dick's Monocoupe, and armed with a 3-A Ansco camera took off. Our idea was to do a little photographing in order to determine the merits of an ordinary snap shot camera in aerial work.

George de Grange

At 1,000 feet the air was biting cold and very rough. We had taken the window off on my side, which let the air come in in a perfect blast. We were a couple of cold birds.

After we had reached 1,000 feet Dick banked the ship around with our backs into the sun and the field showing directly between our prop and the wing struts. It had already been arranged that when he had gotten the ship in what he thought was the best position, he would yell. Soon came the signal, and I snapped the shutter.

Then Dick decided that he wanted to take one more picture of his plant (he owns a concrete block and pipe plant) and go home. All the time the air was getting bumpier and not a bit warm, so we got ready to snap the plant that by now was some 1,500 feet below and to the right of us. Dick yelled, and then everything seemed to happen at once. I snapped the shutter, the bottom fell from under us, and we fell. At the time I was hanging over the side, staring down, thinking of the picture, so it was somewhat of a surprise to see the plant, pipe and all coming up to meet me.

After developing the pictures we found that the first two were fine, showing everything up in detail, but the last one merely showed a blur coming up to meet the camera. However, we both agreed that the mission was a success and are thoroughly convinced that the ordinary type of camera will give satisfactory results if used properly.

General News of THE AVIATION INDUSTRY

First Quarter Figures on Plane Production

AIRCRAFT and engine production and sales statistics for the first quarter of 1930, announced the latter part of June by the Aeronautical Chamber of Commerce, indicate that the sales of America's major manufacturers were keeping pace with production at the end of the three-month period.

Statistical graphs showing the number of airplanes and aircraft engines sold in each of the first three months indicate a decided upward trend at the end of the quarter after a rather weak start during January and February.

The producton report reflects the effect of retenchment programs which most of the manufacturers put into force late in 1929. The sales reports indicate application of revised programs based on the intensive cultivation of the prospective market.

While no statistics on production were compiled for the first quarter of 1929 to make possible a direct comparison with the 1930 quarterly report, the totals were considerably under half the semi-annual production report for 1929.

Seventy eight major aircraft manufacturers reporting to the Aeronautical Chamber of Commerce produced 630 commercial and military planes during the first quarter of 1930, representing a total value, less motors, of $4,569,713.36. Of the total production, 501 units were designed for the commercial market, representing a total value, less motors, at the factory of $3,187,423.09.

The commercial planes produced represented nearly 80 per cent of the total production, while the value of these commercial planes was 69 per cent of the total value of all planes produced.

Sales figures submitted by these manufacturers show the total sale of both military and commercial airplanes to be 584 units. The manufacturer's commercial market absorbed 409 units, or 70 per cent of the total reported sales.

Twenty-two aircraft engine manufacturers report a total of 900 engines uroduced during the first quarter of 1930, for both military and commercial purposes. Of the total production, 514 engines, or 57.1 per cent, were produced for the commercial market. Engine sales during the same period show a total of 916 military and commercial types. The sale of 452 engines, to commercial companies was reported.

As in 1929, the production figures for the first quarter of 1930 show the open cockpit type of biplane leading, with 59.4 percent of total production. Cabin type monoplanes come next with 25.1 percent of total production, and the remainder is largely absorbed by the open cockpit monoplane group.

In 1929, 51 per cent of the total production were biplanes, including all types. Figures for production in the first quarter of 1930 show that 60.6 per cent were biplanes, a proportional increase of nearly 10 per cent.

Voelter Southern Manager for Curtiss-Wright

THE appointment of Karl E. Voelter as southern manager with headquarters in Miami, Fla., was announced recently by Major E. H. Brainard, general operations manager of the Curtiss-Wright Flying Service.

Mr. Voelter is one of the original Curtiss Flying Service men. He has been sales promotion manager with headquarters in New York City since the organization of the company.

Karl E. Voelter

In commenting on the appointment of Mr. Voelter to this important post, Major Brinard said: "The industry's need is for representatives of business experience in direct contact with the public. There are comparatively few men who can be both keen business managers and finished fliers, and when we find them, we place them in important posts."

Voelter has represented Curtiss-Wright at many air meets and air shows. He is an authority on racing, both as competitor and race manager. He has sponsored many race meets and airport openings and has acted in official capacities at them.

Southerners will remember the new manager as the chief timer for the 1930 All American Air Races in Miami, when he acted as assistant to Major Luke Christopher, secretary of the contest board of the National Aeronautic Association, and as one of the pilots of the huge Curtiss Condor in the Ford Reliability Tour in 1929.

In addition to his government pilot's license, he holds racing and sporting licenses issued by the Federation Aeronautique Internationale, and the National Aeronautic Association. He is also a member of the Quiet Birdman organization.

Pay-As-You-Fly-Schools Plan Expansion

With more than thirty students enrolled in its ground school and talking flight instruction, the Porterfield Flying School, located at Fairfax Airport, Kansas City, is preparing to expand.

Instructors and planes will be sent to many cities within a radius of 75 miles of Kansas City on regular schedules to train students, which are enrolled at these places.

These schools will operate on the pay-as-you-fly basis inaugurated a few months ago by Mr. Porterfield. Students will purchase time books and instructors will remove stubs as the time is used. Larry D. Ruch and J. E. Bowen will be the chief instructors.

Grassfield Heads Florida Aviation Bureau

FLORIDA has an Aviation Bureau. It is newly organized but functioning. It promises to do a great deal for Florida aviation.

The inception of the idea came last January with the state-wide aviation meeting in Miami. Recently the aviation committee of the State Chamber of Commerce appointed Paul Grassfield, pilot and business man formerly of Waterloo, Iowa, to take the post of director of the Bureau.

The Bureau already has an extensive program mapped out which will tend to further aviation throughout the state. In this is included legislation, preparation of a statewide air map, airplane model contests, aerial marking thsoughout the state and many other things.

Grassfield hopes to have the present tax paid on gasoline at airports diverted from the treasury of the State Road department, to a fund for the improvement of airports and landing fields.

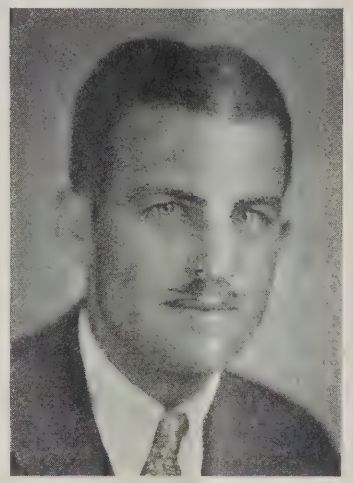
Another legislative measure which met with defeat at the last session of the Florida legislature, and which will be re-introduced at the next session, is one calling for the construction of intermediate landing fields along state highways and supported by the State Road department.

A statewide air map is already under construction. Extensive investigation has been made to ascertain the communities with landing fields and the facilities available there. This is to be compiled into an aerial map which will be distributed far and wide.

This map, it is planned, will be included in a booklet on Aviation in Florida. This will give air lines, airways and their lighting facilities, airports, intermediate fields and their locations relative to the town. It will also point out the advantages of northern companies having winter bases in Florida for instruction purposes.

Aerial marking of the state is also being sponsored and urged. It calls for the painting of the name of the town on all highways leading into the community. The letters will be the heighth of the road. An arrow will indicate the direction of the town. At intersections and bridges, the roads would be marked with the numeral indicating the particular state road as shown on the highway maps. Such marking is already underway at Jacksonville.

An aviation month is now under consideration by the bureau. It would include the All Florida Air tour which was inaugurated last year and air meets at a number of the cities visited.



Paul Grassfield

Georgia Eaglerock Company Is Organized

The Georgia Eaglerock Company, with E. B. Fuqua as president, has been organized to handle Eaglerocks in the state of Georgia.

Chas. M. Ford, Jr., is in charge of sales for the company. He learned to fly in 1924-25 under Captain A. B. McMullen when the latter was operating at Candler Field. He operated a flying school at Decatur for a time and later was connected with the Williams Flying Service of Green-Ville, S. C., in the distribution of Eaglerocks in South Carolina and Georgia.

Mr. Ford expects also to handle the Eaglerock primary gliders.

Henry A. Jencks, Executive Vice-President of the International Airports Corporation, is on a tour of the Southern States. Active operations are to be started soon at Norfolk Atlanta, and Fort Pierce, Florida, upon major commercial airports, preparatory to establishing air transport lines operating from the corporation's major terminal at the Eastern end of Long Island.

Harvey H. Black, formerly traffic manager Southern Air Transport at Fort Worth, has been employed as traffic representative for American Airways, Inc., Dallas, Texas.

This Banker to Finance Airplane Sales

CONCRETE example of the "arrival" of the airplane in the field of conservative finance was demonstrated a few weeks ago when H. O. Nicols, president of the Southern Savings and Finance Company, Inc., at Norfolk, Va., announced that his institution was prepared to finance the sale of airplanes in the same manner as has applied for the past several years in the financing of automobiles.

Under the plan as outlined by Mr. Nicols, persons of responsibility who desire to purchase an airplane can do so by the payment of one-third of the purchase price, plus insurance charges, with the remaining payments divided into 12 equal monthly payments.

A number of the leading insurance companies of the country are now furnishing crash, fire and theft insurance for planes. The rate, as is natural, is comparatively high, but even when cash is paid for a plane and the ownership is outright, the Guggenheim Foundation and other leaders in the aeronautical field have advised that all planes should be insured as a protection both to the owner and the public at large.

Mr. Nicols has been an enthusiastic booster of aviation since his recent trip to New York as a passenger in the Crescent airplane piloted by Col. Clarence Chamberlin. Since making this first flight he has taken several "hops" in the Bird training plane at the Grand Central Air Terminal in Norfolk and on each occasion has handled the plane in the air for several minutes.

"The generally accepted idea that airplanes are dangerous vehicles to travel in is all a mistake," Mr. Nicols says. "In my opinion they are as safe as automobiles and, therefore, offer a safe financial risk for our company."

Ben Epstein, president of the Grand Central Air Terminal, is now negotiating for the sale of half a dozen planes to students at the field through the Southern Savings and Finance Company.

Boll weevil poison will be dusted by airplane on Alabama's 2,000 acre prison cotton farm this year. The plane which was fitted out at the U. S. government station at Tallulah, La., will be piloted by Capt. John Donalson, 166th Observation Squadron, Roberts Field, Birmingham.

Program Arranged For National Air Races

PREPARATIONS for staging the tenth edition of the National Air Races are under way at the model Curtiss-Wright-Reynolds Airport at Chicago, with more prize money and the greatest number of trophies ever to be offered in the air classic awaiting the winners during the ten days from August 23 to September 1.

Major Luke Christopher, of the National Aeronautic Association, has approved forty-four events, which is the largest number of events scheduled in the history of the meet.

The five derbies which will inaugurate the meet are not included in the scheduled list of events. Two derbies will be exclusively for women. There is a possibility of a woman's free-for-all race being added to the program, and novelty events will be added from time to time.

The racing classifications this year have been divided into distinct groups, namely; events for approved types with subdivision of open and closed crafts in this classification, free-for-alls for experimental craft, and a new classification calling for approved type craft flown by non-professional or sportsman pilots. Each class, including the free-for-all, has been grouped into the logical cubic-inch classification which makes for keen competition in each division. The racing events scheduled for approved planes offer a rounded-out schedule of competition for every existing type of approved craft and offers purses on the individual events which justify participation for the large class of professional pilots throughout the country.

The second classification, which is a series of free-for-alls, starts with very low cubic-inch displacement and carries through to the wide open free-for-all.

The third classification is an innovation which was designed to encourage the sale of aircraft to private owners. It is hoped that new groups of contestants, largely private owners, will be attracted by these events, which might be comparable to yacht racing, amateur golf and this type of sport.

All of the executives in charge of staging the races this year are experienced airmen. Captain Max M. Corpening is executive director, Major R. W. (Shorty) Schroeder is contest director, Clifford W. Henderson is general manager and Major Reed Landis is director of advertising and publicity.

The Curtiss-Wright-Reynolds Airport, where extensive preparations are now under way for staging the air Olympiad, is one of the finest flying fields in the country. It was designed and built under the direction of Major R. W. Schroeder, contest director for the meet. The administration building has a capacity of 100 planes. This building will be the base from which the grandstand, capable of seating 100,000 people at a time, will be extended. The airport is located only four miles north of the Chicago city limits. Traffic experts in cooperation with the various committees have perfected plans for handling the million or more people who are expected to visit the field during the ten days. Arrangements have been made for a parking space of 246 acres.

The pilot of anything with wings, from the powerless glider and small 35-40 horsepower planes to the huge tri-motor transports, will find something in this year's schedule to challenge his sporting blood. Five events will cater to the sportsman-pilot, who has been defined by the contest committee as a rank amateur or one not directly connected with the aeronautical industry. Ships in these five events will range from 360 to 1000 cubic inch piston displacement. No cash prizes are offered in these contests, but handsome trophies will be awarded the winners.

A study of the program will show that this year's classic will give the civilian flyer the lion's share of the glory, yet special events have been arranged for the services and they can be counted upon to add their usual colorful performances in acrobatics and formation flying.

An innovation in air racing will go into effect this year. At previous shows the public complained that they found it difficult to intelligently follow what was going on. Accordingly, at Chicago all planes will take off from what it known as a "race horse start," taking off from a line before the grandstand, instead of at one minute intervals as heretofore. Before each race event, the

Architect's conception of grandstand now under construction at the Curtiss-Wright-Reynolds Airport at Chicago for the National Air Races August 23 to September 1, inclusive.

contesting planes will line up in aero-pits before the grandstands where the pilots and planes may be identified by colors or numbers the same as the automobile in the service pits of a motor speedway. The racing triangle is only five miles around and it will be possible for spectators in the grandstand to follow the races around the five-mile triangular circuit for the entire period.

More than $100,000 in cash is on deposit in Chicago banks to be divided among the winners of the forty-four events approved by the N. A. A. Aside from the derby prizes, the biggest cash offering of the meet will be the free-for-all speed event for the Thompson trophy. Ten thousand dollars will be divided among the first three finishers—$5000, $3000 and $2000. In addition, trophies in gold, silver and bronze respectively will be awarded.

There are eleven power classifications, from under 40 horsepower to unlimited power, and there will be free-for-all races in every class. All the famous pilots in America are expected to participate.

The speed at which commercial planes will be flying the coming year will be foretold by the results in the race events. Manufacturers predict that it will be well above 200 miles. The Mystery Ship's record at Cleveland last year is certain to be broken, they state. Several manufacturers are reported building mystery craft this year especially for the meet.

Of the five derbies inaugurating the event, two will be exclusively for women. One for planes of approximately 100 horsepower will start from some point on the Atlantic Seaboard. The other for planes of 200 horsepower will start from some point on the Pacific coast. The same power classification will also apply to men's derbies, which will start from both sides of the nation. There will be no power limit for the non-stop event which will start from southern California.

Five of the forty-four events are for women only. Two closed events for women are scheduled in the 100 horsepower class, one for open and one for closed cabin planes. The same classifications are maintained for the planes in the 200 horsepower class. The fifth event is the woman's dead stick landing contest. The various free-for-alls are open to women contestants.

One of the problems that came up in Cleveland during the races last year was the congestion of the air above the airport. This problem has been recognized by this year's air race officials and they have devised a scheme that will eliminate it, they believe.

Planes will not be allowed to land at will, but must wait for the proper traffic signal on the huge stop and go sign that is now under construction. If the red light is against them, they must circle to the west of the airport. When the green light is flashed on, it will be a signal for them to come in and land. Landing and take-offs will be allowed only every ten minutes in each half-hour.

It is estimated that 700 privately owned planes visited the races in Cleveland last year and 1500 are expected at this year's races, this being one-fourth of the total number licensed by the Department of Commerce.

Events in the National Air Races

ENTRY FEE $100.00 FOR ONE OR MORE EVENTS, EXCEPT EVENTS NOS. 4-8-9-21-25-31-33-36-37-38, WHICH REQUIRE NO FEE.

NAME OR NUMBER	PISTON DISPLACEMENT
1—Women's Closed Course (Open planes)	500 cu. in.
2—Women's Closed Course (Cabin planes)	500 cu. in.
3—Civilians' Free-for-All Race	110 cu. in.
4—U. S. Marines' Closed Course Race	Unlimited
5—Civilians' Closed Course (Open planes)	275 cu. in.
6—Civilians' Closed Course (Cabin planes)	275 cu. in.
7—Civilians' Free-for-All	275 cu. in.
8—U. S. Army Closed Course	Unlimited
9—U. S. Army Closed Course	Unlimited
10—Civilians' Closed Course (Open planes OX5)	510 cu. in.
11—Civilians' Closed Course (Cabin planes OX5)	510 cu. in.
12—Civilians' Closed Course (Open planes)	350 cu. in.
13—Civilians' Closed Course (Cabin planes)	350 cu. in.
14—Civilians' Free-for-All	350 cu. in.
15—Civilians' Closed Course (Open planes)	450 cu. in.
16—Civilians' Closed Course (Cabin planes)	450 cu. in.
17—Civilians' Free-for-All	450 cu. in.
18—Civilians' Closed Course (Open planes)	650 cu. in.
19—Civilians' Closed Course (Cabin planes)	650 cu. in.
20—Civilians' Free-for-All	650 cu. in.
21—National Guard Liberty Engine Builders' Trophy	Liberty Engine
22—Civilians' Closed Course (Open plane)	800 cu. in.
23—Civilians' Closed Course (Cabin planes)	800 cu. in.
24—Civilians' Free-for-All	800 cu. in.
25—Parachute Jumping Contest	
26—Civilians' Closed Course (Open planes)	1,000 cu. in.
27—Civilians' Closed Course (Cabin planes)	1,000 cu. in.
28—Civlians' Free-for-All	1,000 cu. in.
29—Civilians' Air Transport and Efficiency Contest	Unlimited
30—Civilians' Multi-motored Closed Course	Unlimited
31—U. S. Navy Closed Course	Unlimited
32—Thompson Trophy Contest	Unlimited
33—Civilians' Dead Stick Landing	Unlimited
34—Women's Closed Course (Open planes)	800 cu. in.
35—Women's Closed Course (Cabin planes)	800 cu. in.
36—Women's Dead Stick Landing	Unlimited
37—Civilians' Balloon Bursting	Unlimited
38—Civilian Acrobatic Exhibition	Unlimited
39—Civilians' Speed & Efficiency (Cabin planes)	800 cu. in.
40—Sportsman Pilots' Race	350 cu. in.
41—Sportsman Pilots' Race	450 cu. in.
42—Sportsman Pilots' Race	650 cu. in.
43—Sportsman Pilots' Race	800 cu. in.
44—Sportsman Pilots' Race	1.000 cu. in.

Birmingham Glider Club Has 30 Members

The Birmingham Glider Club, recently organized, now has 30 members and actively participates in the sport weekly. A glider manufactured by Southern Aircraft Corporation, Birmingham, is being used by the club. Some of the individual members are considering the purchase of a glider.

The club is sponsored by the Birmingham Aero Club, a chapter of the Birmingham Aeronautic Association. Gordon Kuster, secretary of the Junior Chamber of Commerce, is president.

National Aviation Week Urged by Clements

(Adv. Mgr., Curtiss Aeroplane & Motor Co., Inc., Garden City, L. I., New York)

THE problem of what to do about aviation shows has been the subject of much comment within the industry and in the columns of the aeronautical journals. The consensus of opinion seems to be very emphatically that shows are too frequent, too expensive, and not effective enough in producing actual tive enough in producing contact with aviation or actual sales.

The writer suggests that the shows might profitably be eliminated entirely (with the possible exception of one Winter event) by the institution in their stead of a new event which might be known as National Aviation Week. This would be observed at all airports throughout the country some time in the early spring and would incorporate activities and exhibits that would promote education, interest, and participation in aviation by the public.

The possibilities of activities to arouse and sustain public interest and participation are numerous. It would seem, however, that they should be rigidly limited to those activities which are intended to be educational and practical, avoiding entirely any semblance of stunts or highly spectacular events. A few suggestions follow:

Passenger carrying with reduced rates to all passengers during the week.

Special air mail and express and possibly passenger service to nearby cities.

"Father and Son Day" with special passenger rates to youngsters accompanied by parents.

Flying contests for local flying school students, with prizes for dead stick landing, formation flying, etc.

Flying contests for women pilots.

Model airplane contest for youngsters, with prizes awarded by manufacturers.

Glider contests and demonstrations.

In the larger cities having more than one airport, events similar to dual track meets, with contests being run off simultaneously at all fields and announced over loud speakers.

Also flying excursion tours to all airports.

Possibly night flying events, where practicable.

At the same time, a definite and intensive sales program could be carried on at the airport and promoted by special exhibits arranged in the hangars and kept open to visitors during the evening. Such exhibits could include:

A display of new planes, engines and accessories, available for sale, and possibly a separate used plane exhibit. These exhibits to be arranged and manned by local dealers or distributors.

Exhibits by operating units, such as flying schools, aerial photography, air line operations, etc.

Historical exhibits.

Promotional displays, such as motion pictures, evening ground school courses open to the general public, lectures by persons prominent in the industry.

One standard exhibit to be prepared at national headquarters and distributed at cost to all airports, depicting the progress of aviation, its safety, and the possibilities for its practical use by all classes of people.

The advantages to be derived from the inauguration of National Aviation Week might be briefly summafized as follows:

It would be national in scope and would reach at one time many more people and reach them more effectively, than any show or series of shows.

It would concentrate activities at the airports where the public would actually come in contact with aviation at work instead of merely looking at aircraft reposing peacefully on concrete floors, surrounded by potted palms.

It would stimulate, at an excellent time from a sales standpoint, actual participation in aviation, purchase of aircraft, enrollment in schools, etc. and would facilitate demonstrations by its location at the airport.

It would provide the local operator and the local dealer with an excellent opportunity for representation and would be a means of getting their business season under way very effectively. In this regard especially, there would be a great advantage over the present aircraft shows in which the operators of air mail lines, passenger lines, flying schools, and the like, who in reality constitute the point of contact between aviation and the public, do not participate to any important extent.

It would permit effective advertising and insure splendid publicity.

Last, and far from least, it would be at least partially self-supporting, due to immediate revenue from increased activities in passenger flying, student enrollments, etc.

The writer feels that such an event would have the enthusiastic support and cooperation of the Department of Commerce, the National Aeronautic Association, local civic organizations and the public schools, possibly the Army and the Navy, and the press generally. It would seem that it could well be sponsored and administered effectively by the Aeronautical Chamber of Commerce.

N. V. CLEMENTS

The above is a late aerial photograph showing the Spartan School of Aeronautics at Tulsa, Oklahoma, with new buildings and additions. The Spartan hangar at the Tulsa municipal air port is in the background.

THE editors feel that the accompanying letter from one of the well-known aviation executives incorporates a most practical and constructive suggestion for the advancement of the industry. We shall be glad to have such comments on Mr. Clements' proposed National Aviation Week as any of our readers may care to make.

Landon Appointed Manager of Fairfax Airport

Appointment of Major E. C. Landon as Field Manager of Fairfax Airport, Kansas City, was announced recently. Major Landon assumed the duties of his new post June 6.

E. C. Landon

The position was vacant during the winter, the operation of the port having been carried on by Robert F. Craig, assistant to Guy E. Stanley, president of the airport company.

Major Landon's career in aviation dates back to 1917 when he started flying with the 55th Home Defense Squadron in the Royal Air Force. He was later transferred to the 135th Aero Squadron, U. S. A., and became flight commander and squadron commander.

Previous to accepting the position with Fairfax he was with the Saunders Drive-It-Yourself System, and was in charge of the attempt to establish the fly-it-yourself chain.

Major Landon holds a transport license for 1A and 1C classes of planes, meaning open ships and single motored cabin ships up to the extra heavy class.

Zimmer Appointed Manager of Public Relations

The appointment of George F. Zimmer as public relations manager is announced by the International Airports Corporation of New York City.

Mr. Zimmer, as director of public relations for the firm, will be general contact man and director of exploitation and publicity for this corporation and its affiliated airports, assisting in the promoting, building and operating of airports and the furthering of aviation activities, flying schools, and aero clubs and air transport lines coordination.

During the war Mr. Zimmer enlisted in Naval Aviation and saw active service as an aerial observer along the Atlantic Coast and later in several foreign countries. He was commissioned by Admiral W. S. Benson to make a photographic history of the war on which mission he visited the battlefields of Belgium, France, Russia and Italy making a photographic record of existing conditions.

After the war, under the direction of Mr. Hoover, he observed and made a photographic record of the aftermath of the war, in connection with American relief work that was in progress. He visited twenty countries on this mission, including Russia and Turkey.

He was director of Aviation for the International Exposition at Philadelphia in 1926, where he organized and for a year managed the first Aeronautical Department for the World's Fair.

Tulsa Firm Buys New Plane

Replacing the open plane they have used for the past several months with a larger cabin ship, the Murray Tool & Supply Company, of Tulsa, has recently purchased a new Cessna four-place monoplane, according to an announcement by officials of the company.

The company has found air travel not only a convenient manner of maintaining close contact with its various branches, but on several occasions planes have helped to facilitate the delivery of urgently needed equipment.

Lee Hausinger, formerly of the Curtiss-Wright service, with 2,000 hours to his credit, will pilot the new Cessna.

Marshall Banquets S. A. T. Personnel

"Feed 'em and tell 'em" is a new Jerry Marshall slogan. The popular operations manager of Southern Air Transport at Dallas recently was host for the company at two banquets, one to the maintenance and the other to the flying personnel of S. A. T.

Marshall told the banquet guests that the executives and leaders of the aviation business of tomorrow are coming out of today's personnel, and urged high ideals of service and especially esprit de corps to speed the day when aviation will come into its own.

Porterfield Favors Sales Executives Conference

THE need for a meeting of sales executives and those interested in the exploitation of aircraft is urged by E. E. Porterfield, Jr., president of the American Eagle Aircraft Corporation, to work out a definite sales and advertising program for the industry.

Mr. Porterfield is an exponant of group advertising, believing that by this means only can the industry hope to break down sales resistance on the part of the layman and thereby open up the great field of private owner sales.

"Such a conference," says Mr. Porterfield, "has been suggested for this fall by Clarence Young, of the Department of Commerce, and I for one sincerely hope the plan materializes.

"Development of all types of aircraft has proceeded to a point where there no longer need be any hesitancy on the part of anyone physically fitted about learning to fly. . Use of aircraft has been proved to be economical and dependable in transportation work of all types. Planes cover virtually the same price range as motor cars."

Other leaders in the aeronautical industry are known to concur in Mr. Porterfield's attitude relative to the proposed conference. It is probable that it will be held in Washington early in the fall.

Curtiss-Wright Aerial Survey at Tulsa

Location at Tulsa, Okla., of the southwestern headquarters of the Curtiss-Wright Aerial Surveys has been announced. The company will occupy about 2,000 square feet of floor space, its business being the making of aerial photographs and maps for municipalities, subdivision developers and others. E. E. Ford will be district manager, it is stated.

Parks Purchases Lockheed For Student Training

A Lockheed Vega monoplane has been added to the training equipment of Parks Air College. On this ship every transport pilot student gets five hours of solo instruction. Before being permitted to fly the Lockheed, students are required to have three hours of dual instruction and five hours of solo on a Ryan brougham. Dual controls are not provided on the Lockheed.

The Licensing of Gliders and Glider Pilots

"IN FORMULATING a policy with respect to gliders and gliding, the Department of Commerce has made a sincere effort to further the activity in all its phases," says a statement by Assistant Secretary Clarence M. Young. "The Department believes that the new regulations in no sense could be construed as having a tendency to curtail the manufacture or operation of gliders. Rather, they aim to provide for the elimination of probable sources of danger, which always will exist unless there is intelligent care and attention given to the construction, maintenance and operation thereof.

"The work of the Department with respect to the policy involved a thorough study and examination of the situation which was spread over a substantial period of time. Among other things it included a conference in Washington of all the supervising aeronautical inspectors, as well as a number of engineering inspectors. During the conference many flights were made by the inspectors in various types of gliders, which had been assembled here for that purpose.

"In addition to the conference, comments and suggestions from within and without the aircraft industry were received and considered. The result of the attention given the glider matter by the Department of Commerce has been the formulation of a policy, supported by amendments to the Air Commerce Regulations, which we believe will be the means of assisting the development and promotion of the entire glider activity within reasonably safe limitations.

"The policy is as follows:

"Three classes of gliders will be considered for license and will be licensed upon passing an inspection by the Department of Commerce. The three classes are:

"1. (a) Gliders manufactured under Approved Type Certificates. This corresponds to the present procedure involving the licensing of airplanes which are built under Approved Type Certificates.

"(b) Gliders constructed by any one, provided they are built in accordance with specifications and designs which have been previously approved by the Department of Commerce.

"2. Gliders not manufactured under Approved Type Certificates but which meet the requirements for such a certificate.

"3. Gliders not included in either class 1 or 2 will be eligible for license provided they pass a visual inspection by the Department of Commerce as to design, materials, workmanship, and flight characteristics, and provided they are manufactured prior to October 1, 1930.

"Gliders under Class 1 (a) are those manufactured in quantities by holders of Approved Type Certificates for the type of gliders they are building. Such gliders shall be exactly similar in specifications, design and workmanship to the type approved by the Department of Commerce.

"Gliders under Class 1 (b) are those manufactured by private owners or others who have followed previously approved specifications and design, such as gliders manufactured from the drawings of an approved type glider, provided, of course, the holder of the Approved Type Certificate sees fit to distribute such drawings.

"Gliders manufactured under Class 2 are those which meet all of the minimum requirements for an Approved Type Certificate, but for which a Certificate is not desired because quantity production is not planned.

"Gliders under Class 3 include those built by individuals and clubs with or without previously approved designs, provided they have been manufactured prior to October 1, 1930. Their eligibility for license will be determined by a visual inspection of the design, materials, workmanship and flight characteristics according to a "rule of thumb" method which has been devised by the Department. Gliders so constructed after October 1 will not be considered eligible for license.

"ATTEMPT was made to permit all the freedom possible and yet be consistent with reasonably safe practices, in determining the Department's attitude on the subject of gliders and glider pilots," says a letter from Major Young.

"You will observe that, while student permits are required, they have been made available with extreme ease and without examination of any kind. They would have been eliminated entirely had the air Commerce Act not provided otherwise."

Glider Pilot Licenses

"Three types of glider pilot licenses are provided for—student, non-commercial, and commercial.

"Glider student permits, authorizing the holder to receive instruction and to solo licensed gliders while under the jurisdiction of a licensed glider pilot, will be issued by Department of Commerce inspectors and Department divisional offices upon application. No physical or written examination will be required. A form has been drafted which is both an application and student permit, a perforation permitting their perforation. These forms may be obtained from any Department of Commerce inspector or divisional office.

"The non-commercial glider license will serve the group that is desirous of operating gliders only for sport and pleasure. This license parallels, to a degree, the private airplane pilot license. The only examination required for this license will be a flight test which will consist of a minimum of three flights including moderate banks in either direction. Applications for non-commercial glider licenses may be made on regular pilot application forms obtainable from Department inspectors or divisional offices.

"The commercial glider pilot license will be issued to all applicants physically qualified who successfully accomplish the flight test involved. Applicants for the commercial license are required to pass a physical examination the same as is now required for the private airplane pilot's license. There is no written examination.

"The flight test for the commercial glider pilot license, in addition moderate banks, 360 degree turns includes a series of general and to normal take-offs and landings, and precision landings.

"The glider pilot licenses will be

issued to all grades of airplane pilots upon a satisfactory completion of the tests involved.

"Applications for the commercial glider pilot license also may be obtained from Department inspectors or divisional offices.

"The Department of Commerce is of the firm belief that airworthy gliders, properly maintained and operated, will be an important contributing factor in the promotion of commercial aeronautics."

McMullen Opens School in Jacksonville

The McMullen Aviation School has opened classes in ground school work at the new South Jacksonville airport. Capt. A. B. McMullen will direct the lectures. Others on the staff of the school include E. S. Hensley and Hugh Wood, transport pilots; W. G. Stewart, sales manager, and Joe Blalock, mechanic.

The course consists of 27 lectures covering air commerce rules and air traffic regulations, history of aviation, nomenclature, engines, airplanes, instruments, navigation and meteorology. Classes will be held three nights a week.

About 50 students appeared for the first lecture. Several persons prominent in aviation circles in Florida were also present.

And Now We have the Aviation Porter

The aviation porter has come into existence with the employment of Marcus Washington by Southern Air Transport at Love Field, Dallas.

With his bow and warm southern smile, Marcus adds a picturesque touch to aviation. Fourteen years of experience on the railroad have given him the correct intonation when he chants: "All aboard, plane for Tulsa, Kansas City, St. Louis, Chicago, Cleveland and New Yawk." For, to his duties as an obsequious porter are added the more dignified tasks of announcer.

Marcus, who S. A. T. officials believe to be the first aviation porter, bows customers out of a plane and brushes their coats with all the native grace of a southern negro.. Passengers from the north find his smile and manner particularly appealing.

As a Pullman porter, Marcus was compelled for years to wear the customary white, subjugating his love for color. Now he's happy. Allowed to use his own judgment, he has arrayed himself in stripes and stars of purple, orange and cerise, punctuated with medals, make him gorgeous and irresistible.

Buys His Third Plane in Six Months

J. D. RODEHEAVER, of Norfolk and Miami, who recently completed a course in flying instruction at the Grand Central Air Terminals flying field in Norfolk, Va., and who now has some 30 hours to his credit in solo flying, has purchased his third airplane within six months.

Holding a sentimental regard for the Waco biplane in which he was trained, Mr. Rodeheaver purchased the ship as soon as his instruction was completed. Now, seeking something a bit faster, he has traded this in upon a new Waco of the latest type and has purchased an Aronca monoplane. The Aronca is to be fitted with pontoons.

Tulsa Women Get Pilots' Licenses

Three more Tulsa young women have joined the ranks of licensed aviatrices. One lays claim to the distinction of being the second, and the other two jointly claim to be the third woman to obtain flying permits as the result of finishing complete courses of training at flying schools in this city.

Pauline Woods completed the tests at the D. A. McIntyre school, shortly following Maxine Miller, the latter being first to finish a full course at local schools of flying instruction. Dorothy McBirney and Gerry Honomichl were the other fortunate young ladies, their tests being completed at the Collier School of Aeronautics.

Charles A. Rowe, Department of Commerce aeronautics inspector here, conducted the tests.

Fewell Succeeds Laird in Aviation Department

M. R. "Mike" Fewell, long connected with the transportation world of Texas, latterly as general passenger and freight agent of the Texas Electric Railway, has joined the aviation department of the Dallas Chamber of Commerce as secretary. Mr. Fewell succeeds Maj. Roland A. Laird, who left Dallas to take a position as assistant general manager of the Houston Chamber of Commerce.

"The Chamber of Commerce is pleased with the progress that aviation has made in Dallas and surrounding territory and will continue to work along the same lines as before," said Mr. Fewell to an interviewer. "We shall do all that we find possible to cooperate in the establishment of more air lines out of this city, to work with the established lines and help them develop business, and to seek the establishment of other branches of the aviation industry.

"We are working not only in Dallas, but throughout the state, trying to get every small community to establish usable landing fields for airplanes and every larger town or city to establish permanent air ports, maintained and operated by community, large or small, to identify itself by means of its name in 10-foot-high letters painted on the roof of the tallest building, also a large painted arrow, pointing north. Material progress has been made up to now and we hope to accomplish a good deal along the same lines this year.

Keegan Joins International Airports Corp.

Captain Adrian I. Keegan has recently been appointed vice-president and business manager of the International Airport Corporation of New York City.

Captain Keegan served during the war on the staff of the Commanding Officer of the Mine Sweeping Division, of the Navy, and also was a member of the joint Army and Navy Board of inspection, survey and appraisement of troop transports. He has served as captain and engineer in the army and as superintending engineer of the U. S.. Army Transport Service.

Three new pilots—Walter Braznell, Bennie Howard and Wayne Williams, all former Aviation Corporation mail service men—are now flying the trimotored Fokkers of the Southern Air Transport division of American Airways, Inc., through Tulsa.

Tennessee Adopts Federal Aircraft Regulations

The advisory board of the State of Tennessee division of aeronautics, which is a department of the Tennessee Highway Commission, on June 21, adopted all rules and regulations of the United States Department of Commerce which make it illegal hereafter for a pilot, licensed or unlicensed, to fly a plane which does not conform to federal standards. Under the boards actions, flying an unlicensed plan in Tennessee is made a misdemeanor and an unlicensed pilot is forbidden to fly with passengers ,or go up alone, unless at the directions of an authorized instructor.

Reports of the commission showed that 18 airports in Tennessee are either completed or under construction, all of which were begun this year. The board decided to continue its active program of cooperating with the various towns and cities in developing adequate landing fields.

National Model Meet to be Held During Races

A national championship model airplane meet will be held August 23rd to September 1st at Curtiss-Wright-Reynolds Airport, Chicago, in conjunction with the 1930 National Air Races. Joseph J. Lucas of Chicago, National Outdoor Flying Champion, is chairman of this event. Mr. Lucas is a pioneer model designer.

Elimination contests will be organized in cities throughout the country. All builders and flyers are urged to participate. Information regarding qualifications and regulations may be obtained by writing to Joseph J. Lucas ,c-o National Air Race Committee, Room 295 Hotel Sherman, Chicago, Illinois. Valuable trophies will be offered for winning models. The national finals will be held during the Air Races.

Tulsa To Have Goodyear Municipal Blimp

The Goodyear-Zeppelin Company of Akron will name one of its new blimps "Defender of Tulsa," and send it here as soon as adequate hangar facilities are provided, it is announced. This city recently voted a $650,000 airport-improvement bond issue which contained provision for a $50,000 dirigible hangar 75 feet wide, 200 feet long and 77 feet in height.

One of the largest ever constructed by the Goodyear factory, this dirigible is 55 feet in diameter, 185 feet in length, has two motors, requires a crew of three, will carry eight passengers, its cruising speed being more than 60 miles per hour, and its cruising radius approximately 1,000 miles. It is stated that the blimp—the third municipal dirigible in the country—will be stationed here much of the time, although it can be sent on trips to other cities as the Goodyear company wishes.

Plans are under way to have Tulsa made a regular stop on the proposed New York to Los Angeles lighter-than-air aircraft passenger line, it being pointed out that this is the natural half-way mark and that ample hangar and servicing facilities will be maintained here to accommodate transcontinental dirigibles.

The Clark Airplane Corp., of Ponca City, Okla., has obtained a charter with $50,000 capital stock for the purpose of building an airplane of a type designed by Richard D. Clark, electrical engineer and aviator. The factory will be located near Ponca City.

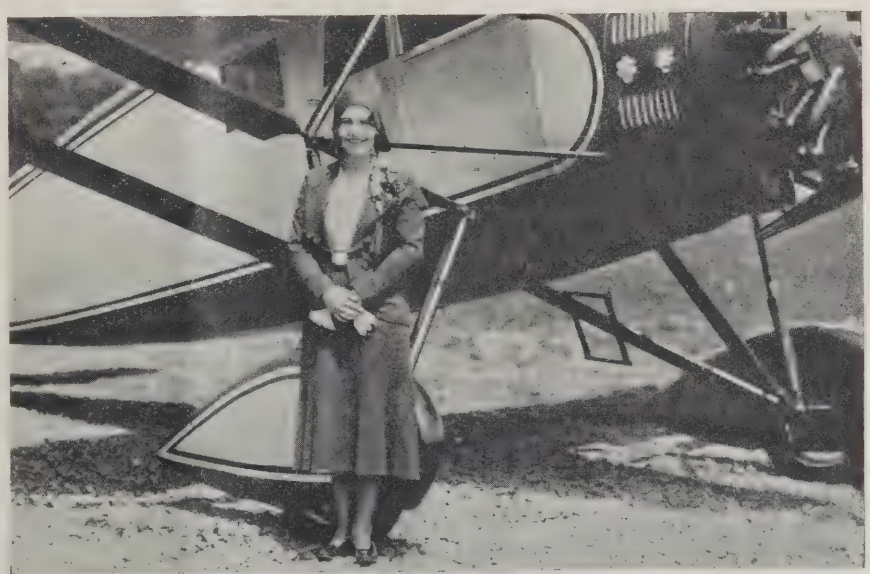
Two Parachutes Required for Voluntary Jumpers

Individuals making parachute jumps for purposes of exhibition, testing, training or demonstration will be required to wear an auxiliary parachute, under a new amendment to the Air Commerce Regulations announced by Clarence M. Young, Assistant Secretary of Commerce for Aeronautics. The amendment becomes effective August 1, 1930.

"The auxiliary parachute must be so arranged that it can be operated in the event the first parachute either fails to function or becomes fouled on any part of the plane or body of the jumper," Mr. Young said. "While it is common practice for parachute jumpers to carry an auxiliary parachute, there have been times in the past when this has been neglected."

An "Aviation Month" will be held in Florida in January 1931. During the "Aviation Month" all sections of the state will be included in a program which has as its objective the practical demonstration of the use of aircraft in commercial as well as pleasure pursuits. Paul E. Grassfield, Director of Aviation of the Florida State Chamber of Commerce is in charge of plans for the event.

Atlanta College Girl Receives Plane As a Graduation Present



Looking for a areer doesn't bother Miss Martha Candler, grand-daughter of Asa Candler, well-known capitalist of Atlanta, Ga. That's been solved. Upon her graduation from Ward-Belmont College of Nashville, Tenn., Miss Chandler was presented with a Stinson cabin plane by Mr. Candler, probably the first girl ever to receive such a graduation present. The photo shows her ready for a flight.

News From Air Corps Training Center

After four years in command of the Air Corps Training Center, Brigadier General Lahm will leave San Antonio July 16 to assume his duties as air officer of the Ninth Corps Area, the Presidio of San Francisco, Calif.

General Lahm, pursuant to War Department orders, established the training center September 1, 1926 and was first general officer assigsed to that command. One of his last official acts as Commanding General was to officiate on June 20 and 22 at the formal dedication of Randolph Field, which has been referred to frequently as "General Lahm's Dream." A pioneer in aviation, he participated in the biggest achievement of the Air Corps—The West Point of the Air.

The dedication of the gigantic airdrome of Randolph Field was indeed a significant event; it marked a high light in the colorful history of aviation and it represents another engineering triumph for the United States Army. The men of the Air Corps Training Center were all glad of the opportunity to officiate, and are justly proud of their association, even in a comparatively small way, with this historic event.

Six years ago, the first "Round-the-World" flyers of the United States Army landed at Kasumiguara, Japan, to complete the first leg of their journey. There were six pilots on that flight and now, a scant six years later, only one of them Captain Lowell H. Smith, is still in the Army. Of the other five who have resigned: Erik H. Nelson is with the Boeing Aircraft Company; Leigh Wade is with Consolidated Aircraft Corp.; Leslie P. Arnold is in automobile business in Hollywood, Calif.; John Harding is with Boeing, and Henry H. Ogden is living in Englewood, Calif., occupation unknown.

Dodd Field, Texas, received 14 new planes recently. Thirteen of the planes were of the observation type powered with Pratt-Whitney Wasp, 450-horsepower aircooled motors. The other plane is a tri-motored transport plane. The fuselage is of special metal construction.

A total of 236 students have been assigned for flying training with the present primary classes at Brooks Field, Texas, and March Field, California. Of the above total, 203 are civilians, and 33 are enlisted men, having qualified for appointment as flying cadets, and who reported to the commandants, Air Corps Primary Flying Schools, Brooks Field and March Field, June 26 and June 30 for appointment as flying cadets and assignment to the classes which began training July 1.

Recommendation that the Douglas 032-A airplane be adopted for basic training at the army flying schools to replace DeHaviland planes, were made by the board of five air corps officers appointed to make tests of that type and the model submitted by the Curtiss Company. The Douglas ship is powered by a Pratt and Whitney Wasp air-cooled motor.

Cross-Country Flight of Spartan Students

UNIQUE in the history of aviation schools in the Southwest and it is said, of the entire nation, is the flight of 12 ships and a personnel of 23 pilots and passengers, members of the graduating class of the Spartan School of Aeronautics, at Tulsa, Okla., which toured Oklahoma and Texas in June.

In charge of Ed Huddleston, the flight included in addition to him, J. J. Keffer, flight instructor; C. L. Claubaugh, flight instructor; Lieut. J. A. Reese, chief of ground school instruction; A. M. Allan, motor and airplane rigging instructor, and the following flying and mechanical students: C. S. Cowan, New York; Karl Williams, West Virginia; Wendel Sweitzer, Springfield, Mo.; John Krebs, Nebraska; John Carroll, Tom Baker and Henry Thompson, Tulsa, Okla.; Jess Green, Bartlesville, Okla.; T. M. Watkins, John Wike and E. F. Vensel, Pennsylvania; Dave Howard, Rhode Island; E. R. Sapp, Brownsville, Tex.; H. Brooks, Oklahoma; W. L. Hollenbeck, Illinois; John Tobin and R. Thompson, Dallas; Henry Rodman, California, and E. M. Farley, West Virginia.

Taking off at Tulsa on June 19th, the flight proceeded to Colgate, Okla., thence to Dallas, Waco and San Antonio, where it stopped at Winburn field On the 20th it took part in the official dedication of Randolph Field, San Antonio, doing formation flying It then returned north via Austin and Waco to Dallas, where the students and their instructors again were brought prominently in the public eye by doing formation flying as part of the dedication ceremonies connected with the dedication of the Good and Foster $75,000 airport at Love Field on June 21 and 22. The return to Tulsa was made via Ardmore and Oklahoma City.

"This is the longest cross-country flight ever undertaken, to my knowledge, by a commercial school," said Mr. Hudlow to an interviewer at Dallas. "We have flown in formation all the way from Tulsa to San Antonio and then back to Dallas and will continue in that fashion back to Tulsa. The boys have behaved like veterans and all of the instructors are proud of them. This flight is part of the advanced training course for transport and mechanical students. Our last transport graduates were taken on a flight from Tulsa to Wichita Falls and back."

A glider and model club has been organized at Huntsville, Alabama, with a membership of approximately 100.

The above photograph of the graduating class of the Spartan School of Aeronautics was snapped at Dallas during the Oklahoma-Texas tour

Latest Developments in AIRPLANES AND ACCESSORIES

The Prudden-Whitehead All-Metal Plane

THE Prudden-Whitehead all-metal monoplane embodies many novel features, which in their entirety, bring to the industry something entirely new in airplanes, though the unusual features to be noted in the construction can in no way be considered radical.

This plane, the product of Atlanta Aircraft Corporation, Atlanta, Georgia, is all-metal throughout, of duralumin and duralumin alclad, and is of the low-wing type.

The fuselage is one of the full monocoque types, the bulkheads being formed from sheet duralumin, over which the corrugated alclad 'skin' is placed.

The monoplane wing of full cantilever construction, carrying three main spars of duralumin, with alclad covering. It is to be noted that the corrugated metal wing covering carries a portion of the stresses.

Possibly the most notable of the novel features is the installation of the engine mount nacelles, on outboard motors, in the leading edge of the wing, carrying a modified NACA cowling, with collector ring in the leading edge.

The landing gear is of conventional split type, with an Aerol shock strut installation on the main wheels and Oildraulic strut at the tail wheel. Bendix brakes, with high pressure tires, are standard equipment.

Ailerons are inset, and the tail-surfaces conventional with balanced rudder.

Ventilation is furnished by specially constructed, adjustable ventilators at each seat, the plate glass windows being fixed. The pilot's cockpit windows carry shaterproof glass, two of which are movable. A remarkably broad range of visibility is to be had not only from the pilot's seat, but from the cabin, as well. Seats are comfortably upholstered in soft chrome leather. Attention to detail is shown in the equipment of a wash room and toilet.

Power is furnished by three Wright J6-R760A motors, and the installation is so made that no factor can affect more than one motor at one time. Fuel, baggage compartment, and all weighty constructions are placed below the passenger cabin. Mail contractors have evidenced interest in the considerable load space, available without the use of the passenger compartment for this purpose.

The plane now produced is an eight-place job, designed for transport use, but the engineers point out the fact that the design is elastic, and may be applied to larger or smaller construction without material loss of efficiency.

The designer, George H. Prudden, has long been identified with the development of all-metal multimotored aircraft, having formerly been associated with William B. Stout during the development of the Stout metal aircraft.

Specifications

Type: Eight-place, cabin, low wing, all metal, land monoplane.

Approved type number: 2-218.

Dimensions: Length overall, 44 ft. 10 in. Height overall, 14 ft. 7-8 in. Wing span, 66 ft. 6 in. Mean chord, 10.5 ft. Dihedral, 6 degrees.

Areas: Wing area, 662.5 sq. ft., (Ailerons included). Stabilizer, 56.1 sq. ft.. Elevator, 32.9 sq. ft. Fin, 16.75 sq. ft. Rudder, 21.17 sq. ft.

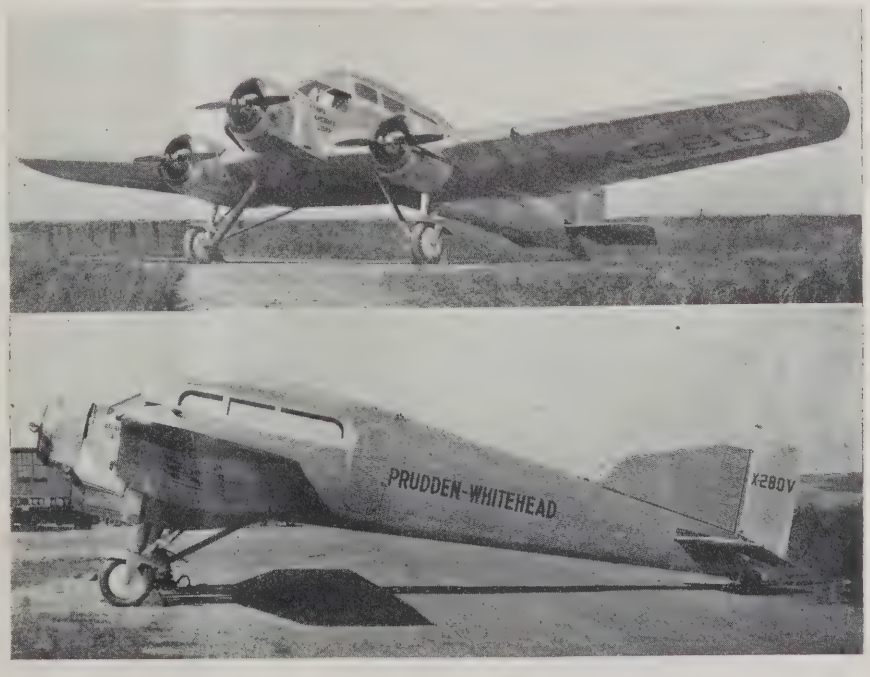
Weights: Net weight, 5200 lbs. Useful load, 2535 lbs. Gross weight, 7735 lbs. Pay load, 1330 lbs. Wing loading, 12.25 lb. per sq. ft. Power loading (3 motors) 10.76 lbs. per h. p. Power loading (2 motors) 16.1 lbs. per h. p.

Power Plant: Three Wright J6-R760A Whirlwinds. Type, 7-cylinder, radial, air cooled. Gasoline capacity, 150 gals. Oil capacity, 18 gals. Fuel consumption per hr., 30 gals. Oil consumption per hr., 1.37 gals. Miles per gallon fuel at cruising speed, 4.12.

Performance: High speed, 145 m.p.h. Cruising speed, 124 m.p.h. Landing speed, 55 m.p.h. Take-off, with full load, 7 sec. Take-off run, 384 ft. Climb at sea level, 1220 ft. per min. Absolute ceiling, 17,000 ft. Service ceiling, 15,000 ft. Altitude maintained with two motors, 10,000 ft. Cruising range, 620 miles. Endurance, 5 hrs.

Construction: Fuselage, all metal monocoque construction. Alclad covered. Wing of full cantilever type, Alclad covered. Main spars of duralumin.

Cabin accommodations: Width, 5 ft. Aisle width, 1 ft. 3 in. Seat width, 1 ft. 6 in. Cabin length, 10 ft. Height, 6 ft. 10 in. Average height, 5 ft. 5 in.



Two views of the Prudden-Whitehead all metal monoplane manufactured by the Atlanta Aircraft Company

Three New LeBlond Radial Engines

THE LeBlond Aircraft Engine Corporation, Cincinnati, Ohio, is now manufacturing three approved type radial air-cooled engines in the small horsepower class. The LeBlond model 5-DF and model 5-DE are five cylinder, the former developing 85 h. p. at 2125 r.p.m. and the latter developing 70 h.p. at 1950 r.p. m. The model 7-DF is of seven cylinders developing 110 h.p. at 2150 r.p.m.

These three power plants are of compact design and intended primarily for use in one and two place ships for the private owner or for training purposes. A majority of the parts in the three engines are interchageable. They have the same installation dimensions, allowing a broad range of power without altering the airplane.

Specifications on the three Leblond models follow:

LeBlond Model 7-DF

Type: 7-cylinder radial air-cooled.
Approved rating: 110 h. p. at 2150 r.p.m.
Maximum rating: 119 h.p. at 2275 r.p.m.
Bore: 4.25 in.
Stroke: 3.75 in.
Displacement: 372 cu. in.
Compression ratio: 5.4:1.
Overall diameter: 33.25 in.
Overall length: 23.0625 in.
Weight: Less hub, 275 lbs.
Fuel Consumption: Full throttle, .54 lbs. per h.p. hr. 9 3-4 gals. per hr. Cruising 7 gals. per hr.
Oil Consumption: .0151 lbs. per h.p. hr.

LeBlond Model 5-DE

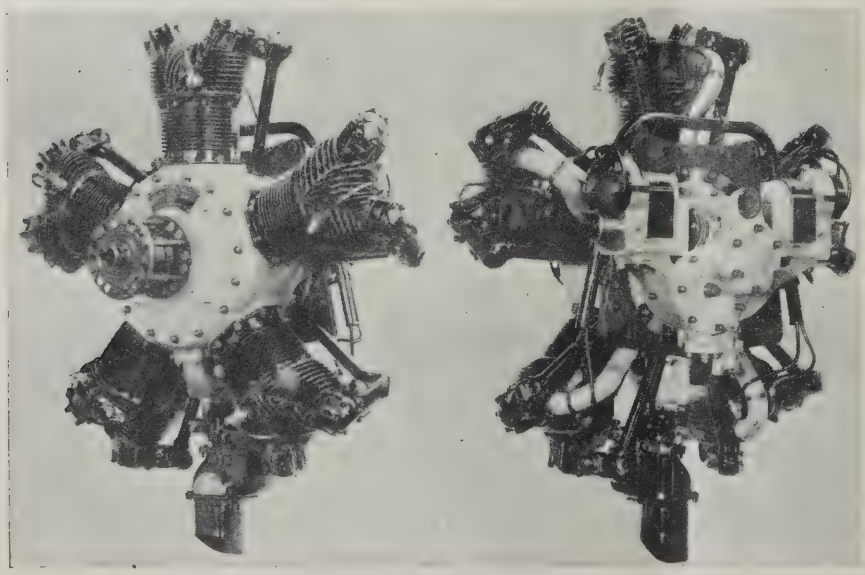
Type: 5-cylinder radial air-cooled.
Approved rating: 70 h.p. at 1950 r.p.m.
Maximum rating: 75 h.p. at 2075 r.p.m.
Bore: 4.125 in.
Stroke: 3:75 in.
Displacement: 250.5 cu. in.
Compression ratio: 5.35:1.
Overall diameter: 33.25 in.
Overall length: 22.25 in.
Weight: Less hub, 235 lbs.
Fuel Consumption: Full throttle, .60 lbs. per h.p. hr. 6 3-4 gals. per hr. Cruising 4 3-4 gals. per hr.
Oil Consumption: .015 lbs. per h.p. hr.

LeBlond Model 5-DF

Type: 5 cylinder radial air-cooled.
Approved rating: 85 h.p. at 2125 r.p.m.
Maximum rating: 90 h. p. at 2250 r.p.m.
Bore: 4.25 in.
Stroke: 3.75 in.
Displacement: 225 cu. in.
Compression ratio: 5.4:1.
Overall Diameter: 33.25 inches.
Overall length: 22.25 in.
Weight: Less hub, 219 lbs.
Fuel Consumption: Full throttle, .52 lbs. per h.p. hr. 7 1-2 gals. hr. Cruising 4 3-4 gal. per hr.
Oil Consumption: .015 lb. h. p. hr.

New Travel Air Dusting Plane in Service

One of the first craft of its kind ever built—a Travel Air specially constructed cotton duster plane—has recently been put into service. This ship carries 600 pounds of dust in the forward hopper and is capable of covering from 350 to 400 acres per hour, it is said. It is powered with a Whirlwind-7 motor. Three of these planes have already been shipped to South America, and C. J. Lucas, Curtiss-Wright sales manager for Oklahoma recently delivered one of the dusters to Louisiana.



Front and rear view of the LeBlond Model 5-DF

Approval Granted Comet New Model 7-E

Approved type certificate No. 47 has recently been issued the Comet Engine Corporation on the Model 7-E Comet. This model has also been given approval by the Navy after a fifty-hour test.

Specifications are as follows:

Approved type No. 47. 7-cylinder air-cooled radial. Approved rating 165 h.p. at 1900 r.p.m. Fuel consumption, .55 lbs. per h.p. hr. Dimensions: Bore, 4 1-2 in.; stroke 5 1-2 in.; displacement, 612 cu. in. Weight: Without exhaust manifold or hub, 395 lbs.

Comet Model 7-E

New Model Command-Aire Under Construction

A special monoplane now under construction at the Command-Aire, Inc., factory in Little Rock will be entered in the all-American flying derby starting at Detroit July 21 by the Little Rock Racing Association, an organization composed of 37 prominent citizens, including Gov. Harvey Parnell .

The plane will be called the "Little Rocket," and if plans of the association mature as now outlined, its pilot over the 7,500-mile course will be Al Williams, famous flier.

Seventeen planes have entered to date for the $25,000 in prizes which have been offered for first, second and third place winners.

The Little Rock entry was designed by Albert Voellnecke. The plane will be capable, its designer said, of attaining a speed of 170 miles per hour. It is modeled on the British Tiger Moth, which developed a speed of 178 miles per hour. The plane will have a wing spread of 23 feet, will be 18 feet long and will cost approximately $12,000, Voellnecke said.

Verville Announces New Sport Trainer

THE Verville Aircraft Company of Detroit, Michigan, has recently announced the Verville Sport Trainer and the Verville Service Trainer, built under Approved Type Certificate No. 323.

The two models are identical except for the equipment, the former being a luxuriously equipped sport ship, and the latter carrying only customary training accessories. They are designed strictly in accordance with all specifications and load, factors of Army training planes and are as a result extremely rugged, it is said.

The Verville Trainers are two-place, open, land biplanes with provision made to convert them into seaplanes. The wing spread is 31 feet, height over all 8 ft. 9 in., and length 24 ft. 3 in. A solid upper panel is used with four degrees dihedral in the lower panels. Sufficient stagger is used to provide unobstructed egress from the forward cockpit. Both cockpits are exceptionally roomy and are provided with comfortable parachute type seats.

By means of an unique design the extreme rear of the fuselage is built with a rigidity which prevents any possibility of flutter, weave, or distortion of the control surfaces even during the most violent maneuvers.

Welded chrome molybdenum steel tubing is used throughout the fuselage and tail surfaces. The wings are built up of solid wood spars and fabricated wood ribs. Ailerons are riveted duralumin.

The Verville Trainer, manufactured under A. T. C. Number 323

The ship is powered with the Continental A-70 165 H. P. motor and has for standard equipment as a Sport ship: Standard steel propeller, Heywood air starter, balloon wheels, dual A. P. C.. brakes, oildraulic shock absorbers, full caster tail wheel, dual stick control, parachute seats, head rest, two three-piece safety glass windshields, gasoline gauge, tool compartment and kit, air speed indicator, two tachometers, compass, two altimeters, two oil pressure gauges, two oil temperature gauges, navigation lights, dry battery, fire extinguisher, first aid kit, dual throttles, dual switches, dual stabilizer adjustment, baggage compartments.

When delivered as a service trainer no starter is installed and sundry other equipment not desirable for student work is omitted.

Specifications are as follows:

Approved Type No. 323, 2-place, open, land, biplane.

Dimensions: Length overall 24 feet 3 1-2 inches, height overall 8 feet 9 inches, upper wing span 31 feet, lower wing span 31 feet, upper wing chord 50 inches, lower wing chord 50 inches.

Areas: Wing (Incl. ailerons) upper 124 sq. ft., lower 118 1-2 sq. ft. Ailerons 27.6 sq. ft.

Weights: Empty, 1562 lbs.; useful load, 681 lbs.; pay load 420 lbs.; gross weight loaded, 2243 lbs.; wing loading, 9.27 lbs. per sq. ft.; power loading, 13.6 lbs. per H. P.

Power Plant: Continental A-70 rated 165 H. P. at 2000 r.p.m.

Type: 7-cylinder ,air-cooled, radial; fuel capacity 36 gals.; oil capacity, 6 gals.

Performance: High speed fully loaded, 115 m.p.h. Landing speed fully loaded, 40 m.p.h. Cruising speed fully loaded 95 m.p.h. Climb (at sea level) fully loaded, 900 feet minute. Cruising range 3 1-2 hours.

Construction: Fuselage welded chrome molybdenum steel tubing, fabric covered. Wings Clark "Y"-15 airfoil section, spruce spars, spruce and mahogany ribs fabric covered.

Price: $5250.

THE above photograph shows the Stinson Jr. SM-8A seaplane equipped with Edo Model 3300 float installation. The ship has just recently completed its Department of Commerce test on floats and has veen granted approved type certificate No. 295 as a seaplane. The preliminary tests were conducted by George B. Post, of the Edo Aircraft Corporation, and Roderick Wright, chief test pilot of the Stinson Aircraft Corporation. The ship becomes the 27th type of land plane to be approved by the Department of Commerce as a seaplane Edo equipped.

Texan's Novel Invention Shows Plane Location

A novel instrument which shows the exact location of airplanes in flight near a given city has been invented by O. R. Pope, in charge of the Western Air Express radio station at Amarillo, Texas.

This device, which its inventor calls a "metronome," has a minature plane to which a wire is attached in such a manner that, with the cooperation of an alarm clock, the model plane moves toward or away from the metronome exactly as the actual ship moves to or from the airport.

Pope has prepared a special board, scaled in miles, showing the various stops on the W. A. E. lines out of Amarillo in each direction, and a glance at the metronome reveals the whereabouts of the planes.

Spartan Building Mail And Dusting Planes

Air mail planes and ships to be used in "dusting" cotton are now under construction at the factory of the Spartan Aircraft Company, Tulsa, Oklahoma, according to an announcement by L. R. Dooley, sales manager.

The duster is featured by a special suction arrangement designed to turn the cotton boll over in passing, enabling the poison application to strike the nether side favored by the destructive boll weevil. Several requests for bids on such equipment have been received from cotton states of the South, according to Dooley.

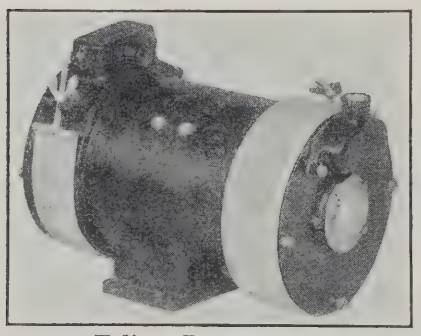
The mail plane will be the regular seven-cylinder job with special accommodations and arrangements for the pilot, and is designed to carry 450 pounds of mail in addition to fuel and pilot load.

Two more of the new cabin models are also nearing completion, Dooley stated.

New Eclipse Dynamotor for Aircraft Radio

A new type aviation dynamotor for aircraft radio recently has peen developed and manufactured by the Eclipse Aviation Corporation, East Orange, N. J., division of Bendix Aviation Corporation. This is to be known as the type A. It is especially designed for radio power of multi-engined transport and passenger planes.

The dynamotor has a rated output of 525 watts and is driven from a 12 volt battery. The rated voltage



Eclipse Dynamotor

can be attained with a regulation within 12 per cent as the load changes from zero to full load.

An outstanding feature of this machine is its ability to operate under sustained overloads for very long periods of time, the manufacturer claims. This advantage is obtained without any increase in weight over the conventional aviation dynamotor.

The four bolt mounting base enables it to be installed at any point within the plane fuselage where the length of cable to battery and radio set would not be an obstruction. Remote control and the use of a minimum amount of heavy cable is obtained by designing the dynamotor to operate in conjunction with the Eclipse relay switch. Completely shielded, the dynamotor and switch weighs 30 1-2 pounds.

Boeing Airplane Company has started construction of 27 Boeing F-4B2 single seater, Wasp-powered Navy fighters. Delivery is to be made in the spring.

United States Introduces New Airplane Tire

The United States Rubber Company has introduced a new United States low pressure airplane tire built in conformity with standard tire construction principles. The

U. S. Low Pressure tire

new U. S. product is now being exhibited at distribution points throughout the United States, according to Joseph A. Faucher, manager of U. S. airplane tire sales.

A description of the tire as contained in a company announcement states that: "Use of these low pressure tires offers increased safety in flying operations through easier landing, and the ground performance of the airplane is much improved. Increased ground contact permits flying from soft and muddy fields with safety. Aerodynamical drag, weight and cost of the new tire and wheel assemblies are comparable in every way with present high pressure equipment."

New Standard Announces Price Reductions

SHARP reductions in prices and the inauguration of a new sales policy were announced recently by New Standard Aircraft Corporation, of Paterson, N. J.

The 5-place open cockpit New Standard, powered with Whirlwind J-5 or J-6 225 H. P. engine, was reduced from $9,750 to $7,990. The Kinner-powered trainer, similar to the United States Navy NT-1, was reduced from $4,475 to $3,131.

R. H. Reiffin, managing director, in commenting upon the recent changes by the company said: "During the past year we have expended tens of thousands of dollars installing labor-saving machinery. Early in the year we promised purchasers of New Standards that if orders justified increased production, manufacturing economies would result. These economies have been effected and we have made rebates to purchasers of New Standard trainers. Prices have been materially lowered."

Due to the fact that more than 90 per cent of New Standard sales have been made directly to commercial operators. officials said, the sales policy of the company has been changed to eliminate distributors, large discounts and exclusive territory.

All prices now are net, according to George Daws, sales manager, except that registered owners of New Standards are given a small commission for selling additional ships. No discounts are allowed on first purchases.

The New Standard sport plane, Kinner-powered, continues to list at $5,100 with a larger discount allowance for the seller.

The Consolidated Aircraft Corporation has delivered the first of its Model 20, Type 2, Fleetster fast mail planes to the Western Airways Ltd., of Winnipeg, Manitoba.

This model, which is a combination mail and passenger ship, will be subjected to exhaustive tests over the Canadian company's line throughout the western part of Canada.

The Boeing primary type glider is ready for testing at the Boeing School of Aeronautics, in Oakland, California. A Department of Commerce approved type certificate will be requested.

Standardized Performance Airplane Tests

THE first test of an airplane under the new standardized performance code devised to give the public accurate information on the speed and performance characteristics of airplanes has been announced by the Aeronautical Chamber of Commerce of America, Inc., sponsors of the tests.

A Curtiss Robin, equipped with a Challenger engine, was put through its paces June 21 at Roosevelt Field before officials of the Aeronautical Chamber of Commerce, the Department of Commerce, New York University and seven other universities which are preparing to carry on the test work.

This test laid the ground work for a campaign within the industry to certify the performance of airplanes and to guarantee truth in the advertising of aircraft manufacturers who claim certain speeds and performances for their products. Heretofore, the public has had to depend entirely upon the statements of manufacturers as to the performance characteristics of their planes.

The tests at Roosevelt Field were under the supervision of New York University one of eight institutions in the United States selected by the Aeronautics Chamber of Commerce to test airplanes under the new code. Professors from the seven other schools were present from all parts of the country to witness the first tests, so that they may prepare to carry on the work in their own regions.

The new code provides that a manufacturer may have his plane certified in any of the following tests; high speed; climb to 10,000 feet; ceiling; angle of initial climb; length of take-off; time of take-off; length of landing run; landing speed, power off; minimum speed, power on; minimum speed, power off.

When the craft has been tested under the plan with calibrated instruments, the manufacturer will have certified figures on what the plane will do from a recognized organization and under the sponsorship of a well-equipped university aeronautics laboratory. Certificates will be awarded the manufacturer, showing the exact performance so that there will be no guess work, and when a manufacturer sells a plane for a certain stipulated duty where it must carry a specified load at a given speed, the craft will be certain to give the performance claimed for it.

The tests will be restricted at first to performance characteristics of commercial aircraft, but when stability and controllability tests are developed, they will be undertaken.

New Rusco Safety Belt For Primary Gliders

The Russell Manufacturing Company, of Middletown, Conn., announces a new safety belt specially designed for use with primary gliders.

The design was worked out in cooperation with the American Motorless Aviation Corp., of New York City, to the specifications of Heinrich Knott, well known engineer and soaring pilot.

Features of the new belt are the positive lock fastener and the 8-inch wide waist band which gives support and protection to the pilot. Both ends are easily adjustable through a friction type buckle similar to the design used on parachute harnesses.

The belt is furnished with or without special elastic connecting links in the form of Rusco Aero Rings. It is said that officials of the American Motorless Aircraft Corp. feel that the new belt is superior in every way to the imported belts formerly used. These foreign belts employed steel spring shock absorbers and were fabricated from a material furnishing less support to the pilot's body.

The Boeing Monomail, new long-wing, all-metal, Hornet-powered monoplane, which has aroused much interest in aeronautical circles, has met the expectations of design engineers and after completion of tests with various combinations of engine, propeller and ring cowl, it has been placed in regular service on the San Francisco-Chicago route.

Towle Seeking Name for Unique New Plane

THE Towle amphibian, a plane that can take off from land, water, ice or snow, presents a radical departure in aircraft design. This innovation in aircraft was designed and built by Tom Towle.

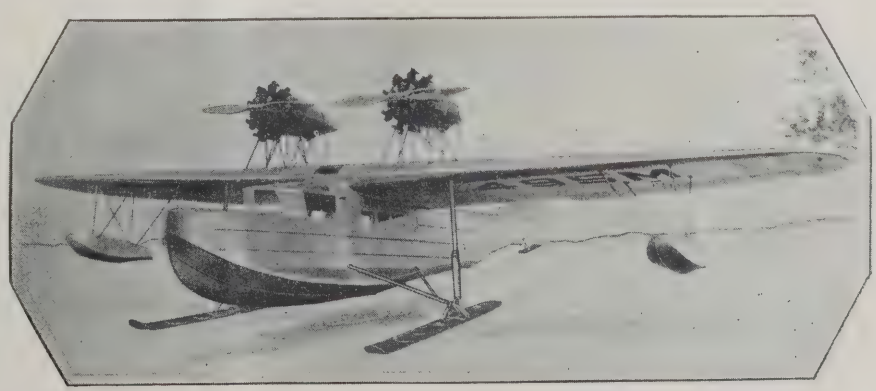
Lexicographers admit the inaccuracy of the term "amphibian" as applied to this plane, and the manufacturer is now seeking a suitable name for his product.

The wheels for use on land are drawn up by a hydraulic jack when water landings are made. Skis, which incorporate shock absorbers in their design, are applicable to the same undercarriage which carries the wheels. This combination of landing gear makes possible the use of the plane on any Tropic-Arctic passenger or freight line, winter or summer.

Landings could be made on snow covered airports in Canada, or on the frozen surface of a harbor, and the same plane could land one thousand miles away on a Florida or Gulf Coast harbor. The Towle, said to be the first all-metal flying boat built in this country, seats eight passengers and a pilot. It is of the full cantilever type wing, giving it an unusually clean appearance.

There are no spars and no ribs in the wing structure. Structural strength is obtained through the use of a special trussing, which consists of a continuous sheet of duralumin from wing tip to tip. This sheet is zig-zagged from the front to the rear of the wheel and riveted to the metal "skin" of the wing. Instead of the 25,000 rivets as in the ordinary metal wing, the Towle needs but 5,000, which results in a saving of time and cost of fabrication.

The Towle is powered with two 225 h. p. Packard Diesel engines.



The unique land, water, ice and snow plane designed by Tom Towle

Second Oldest Tri-motor Makes the Grade

THE Fokker tri-motor, Southern Cross, which completed the first west-east flight from Europe to the United States June 26, is the second oldest tri-motor in the world, according to Anthony H. G. Fokker, its designer and builder. Admiral Byrd's Fokker, the Josephine Ford, in which he flew over the North Pole, was the first.

The Southern Cross was reconditioned in the Fokker factory at Amsterdam previous to its recent trans-Atlantic flight. The cost of such replacements and repairs as were necessary was approximately 20,000 Dutch gliders, or about $8,000, at the current rate of exchange, which is considered low in consideration of the ship's four years of age and service from the Arctic to the Antipodes. In discussing the preparation of the ship for flight with Mr. Fokker while in the United States a month preceding the Atlantic crossing, Captain Charles Kingsford-Smith expressed himself as willing to fly the Southern Cross with only minor repairs and replacements. It was on Mr. Fokker's insistence that he consented to the thorough overhaul to which the ship was subjected, preceding the flight.

The Southern Cross was first taken by Sir Hubert Wilkins to Alaska and there used in flights preliminary to his epochal voyage from Alaska to Spitzbergen across the North Pole four years ago. During these preliminary flights the welded steel tube fuselage was badly damaged by a forced landing on rough ice. Sir Hubert took the undamaged wing and flew it on the fuselage of a Fokker Super-Universal. Wing and fuselage were later salvaged from the ice and sent to the Pacific Coast where the fuselage of the original ship was repaired and set under the original wing. The Southern Cross is thus not the parts of two planes, as has been said, but the original structure built four years ago.

After service on the Pacific Coast, Kingsford-Smith, Harry Lyons and their party made their flight to Australia from California two years ago. After much flying in the Antipodes, Kingsford-Smith flew the plane to England last year. It has thus been subjected to the vicissitudes of weather from the Arctic ice to the tropical mud flats in which Kingsford-Smith and his party were lost for many days after a forced landing in Australia. Despite this, Kingsford-Smith expressed the utmost confidence in his ability to fly this veteran of the skies of all the world through the North Atlantic that has stopped every other similar attempt. He used the original Wright J-5 motors.

"They offered me new motors," he said while in the U. S., "but I know the drum of those old J-5's and I'm sure of them. They have been kept in top-hole condition and I'm sticking to them, just as I stick to the splendid old ship. She's one of the sweetest flying ships and one of the greatest weight lifters and one of the soundest things that ever took the air.

"Of course, I had to get through. You see I'm to be married in the autumn and my dear girl would have been dreadfully upset had I dumped myself into the Atlantic before that."

Inspection of the Southern Cross after its landing in America revealed that aside from a new fabric covering for the fuselage and control surfaces, most of the other work was of a minor character. The woodwork of the spars and ribs and the wood veneer covering of the wings required only partial renewal and reinforcement. A few steel tubes in the fuselage were repaired. The wing tanks, fuselage tanks and the oil tanks were repaired and new gas and oil leads installed. All principal bolts were replaced in the main fittings and only minor adjustments were found to be necessary after a thorough dismounting of steering gear, landing gear and engine mountings. When the plane left the Amsterdam factory it was pronounced as equivalent to new. The cost of repairs was 12 per cent of the ship's original cost.

30-Passenger Commodore Seaplane Launched

THE first of the new 30-passenger Commodores, the largest seaplanes to be placed in service on any air line in the world, was launched recently by the Consolidated Aircraft Corporation at Buffalo.

The new Commodore exceeds in size any seaplane thus far produced by either Germany, France or England and gives the United States first place in the operation of super seaplanes in South American service. Its launching follows two years of experimental work by Consolidated engineers. Although foreign designers have been working more than three years to perfect a plane of this type, they have not yet put anything comparable into service.

The new plane is a development of the present 22-passenger Commodore now in use by the NYRBA Line and has been built to compete in the race for foreign markets and international trade. Following the launching, demonstrations of the plane were made at Buffalo, after which it was delivered to the NYRBA Line. Officials of that line have not yet announced on what run it will be placed.

The new plane differs in its accommodations from the present Commodore in that passengers will enter it from the front. The salon-deluxe, seating six, is forward, with three regular eight-passenger compartments behind it. The radio room and toilet are located in the rear.

The Commodore is equipped with twin Pratt and Whitney Hornet engines and is capable of a high speed of 138 miles per hour, a cruising speed of 105 miles per hour and a landing speed of 55 miles per hour. Useful load is 7,600 pounds.

The improved 30-passenger Commodore seaplane. P and A photo

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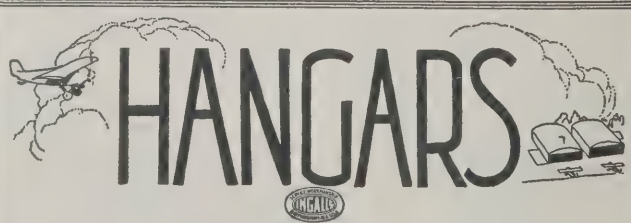

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Advertisers' Index

A

Aero Supply Mfg. Co., Inc. ..... *
Aeronautical Chamber of Commerce 8
American Aeronautical Corp. ..... *
American Eagle Aircraft Corp. 55
Arkoma Airways, Inc. 55

B

Bowman & Company ..... *

C

Carolina Metal Culvert Co., Inc. ..... *
Cessna Aircraft Co. 56
Consolidated Instrument Co. ..... *
Crouse-Hinds Company ..... *
Curtiss-Wright Flying Service ..... 2 and 3
Curtiss-Wright Sales Corp. ..... *

D

Detroit Aircraft Corp. 1

G

Gilmore Oil Co. ..... Inside Back Cover
Great Lakes Aircraft Corp. ..... *

H

Harrison-Wright Co. 55
Harry Bros. Co., of La. 6
Heiss Hotel System ..... *
Hotel Tuller 56

I

Ingalls Iron Works Co. 56
International Airports Corp. 55

L

Logan Aviation Co., Floyd J. 6

M

Miami Air College ..... *
Miami Airplane & Supply Corp. ..... *
Morrison Hotel 6

N

New Standard Aircraft Corp. ..... 4 and 5

P

Packard Motor Car Co. ..... Inside Front Cover
Parks Air College 1
Parks Aircraft Corp. ..... *

R

Rich Associates, G. Gifford ..... *

S

Service Steel Company 56
Sky Specialties Corp. ..... Back Cover
Southern Air Transport Co. ..... *
Spartan School of Aeronautics 55
Stanavo Specification Board, Inc. ..... *

T

Texas Company ..... *
Titanine, Inc. ..... *

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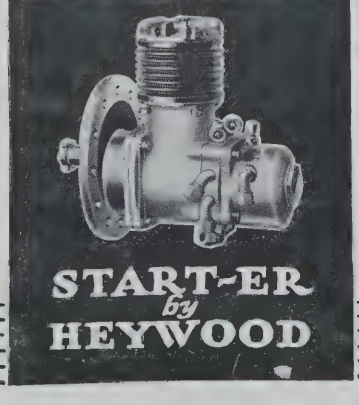

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SOUTHERN AVIATION

The Blue Book of Aeronautical Activities in the Southern States

AUGUST 15, 1930

GENERAL LIBRARY
UNIVERSITY OF GEORGIA

Primary training planes passing in review at Randolph Field dedication ceremonies, June 20, at San Antonio, Texas.
(Photo by 22nd Photo Section, U. S. Army Air Corps.)

And now—
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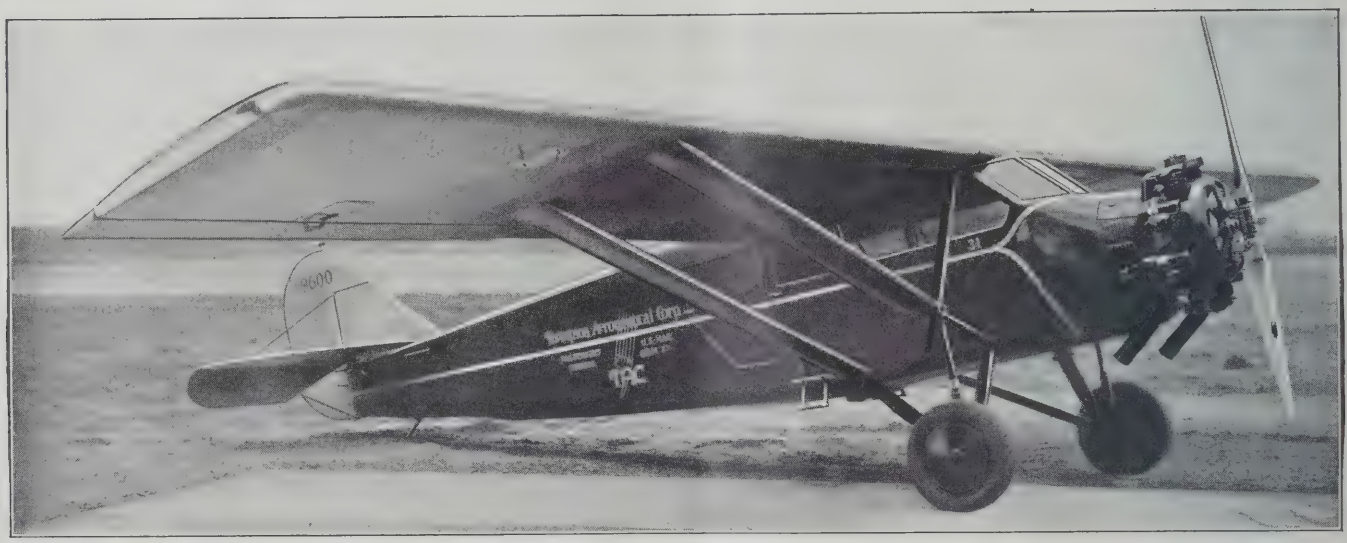

OVER the post roads of the air, the Packard-Diesel now flies the mail—swiftly, safely and with utmost dependability. For the Thompson Aeronautical Corporation—holder of government mail contracts—has equipped a Stinson plane with a Packard-Diesel and placed it in active service.

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Tests conducted after the Packard-Diesel installation was completed were highly satisfactory and the ship was granted an approved type certificate. Officials plan to use the Packard-Diesel-equipped plane on various T. A. C. routes in order to give all the pilots an opportunity to fly it.

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ASK THE MAN WHO OWNS ONE

PACKARD

SOUTHERN AVIATION is published monthly by W. R. C. Smith Publishing Co., Marietta, Ga., and Atlanta, Ga. Subscription rates United States and Possessions, $1.00 per year; Canada, $1.50 per year; Foreign, $2.00 per year. Entered as second-class matter Feb. 14, 1930, at the post office at Marietta, Ga., under the act of March 3, 1879.

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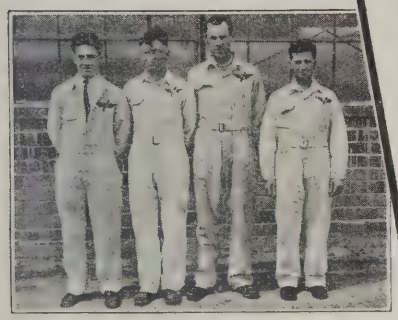

Back in April, the Lockheed Aircraft Corporation wired to Parks: "This your authority offer employment upon arrival Burbank four students your selection." These four Parks-trained men were selected.

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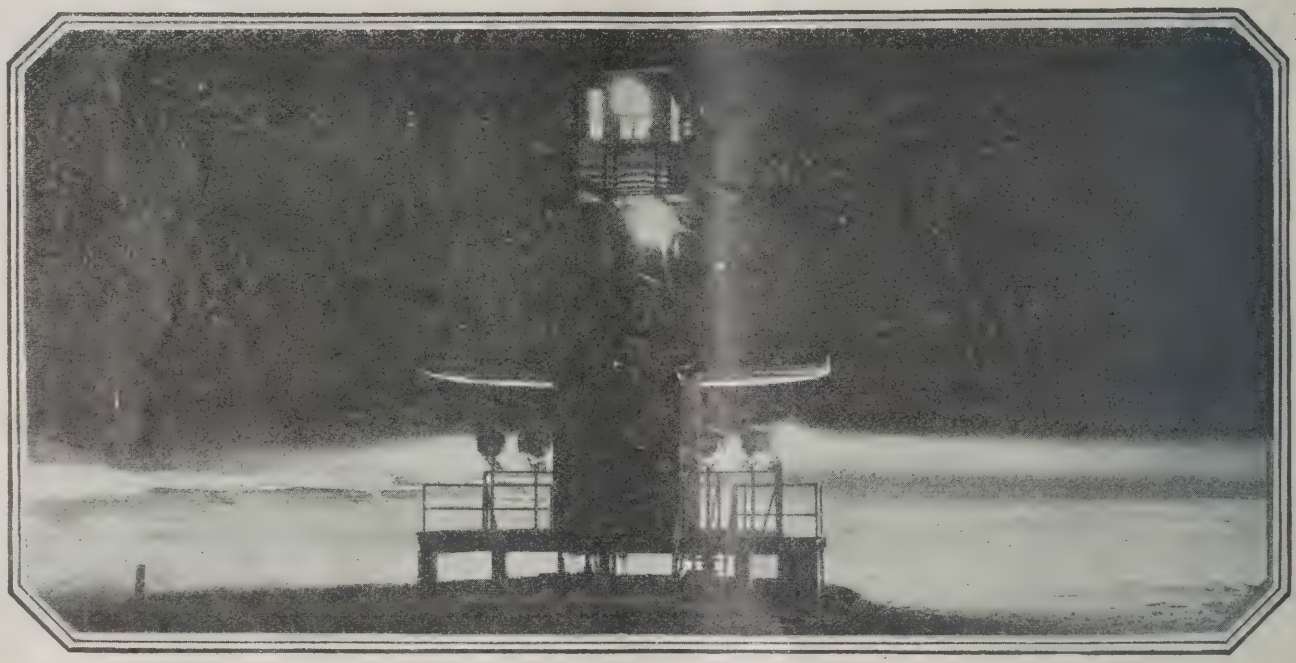

With the steady increase in air traffic there will be more and more night flying and those ports with the most complete lighting equipment will of course receive first consideration as a terminal for air lines offering a twenty-four hour service.

With this in view Baltimore has equipped its airport to take care of the safe operation of planes at night by installing Crouse-Hinds lighting equipment. The more important items included in the installation are the landing field floodlights, boundary lights, obstacle lights, hangar exterior floodlights, a ceiling projector and a ceiling height indicator.

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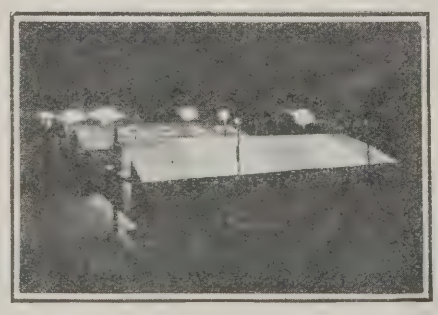

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August 15, 1930

SOUTHERN AVIATION

Vol. 1, No. 12

Published monthly in the interests of aviation and all aeronautical activities in the southern states

T. W. McALLISTER, *Editorial Director.*
B. H. VINCENT, NAT M. JOHNSON AND S. R. McGILLIS, *Editorial Staff*

Contents

The Cost of Operating a Plane 5
Dedication of the West Point of the Air 6
10,000 Hours in the Air 9
Views of Lovell Field, Chattanooga 11
Development of Dallas as an Aviation Center 12
Points to Remember When an OX Conks 15
Washington's Model New Airport 16
The Airplane as a Medium of Sales Expansion 19
The Requirements for Municipal Airports 21
News of Southern Airports and Airways 23
New Airport Developments 31
Aeronautical Personalities 32
General News of the Aviation Industry 37
New Airplanes and Accessories 45

THOSE who are inclined to question the practical dollars-and-cents value of civic activity in behalf of aviation should read the article in this issue entitled "The Development of Dallas as an Aviation Center." In what are still the acknowledged pioneer stages of the development of aviation, the industry already has a payroll in Dallas in excess of $600,000 a year, while annual expenditures in the city probably will total far in excess of that amount. The time is not far distant when aviation will bring millions of dollars a year to each of the several leading southern cities — thus amply justifying the work they are now doing to develop aviation.

* * *

THERE are thousands of business executives in this country who could save much valuable time by traveling in their own private planes—but they probably regard the cost as excessive. The first article in this issue gives complete figures on the cost of owning and operating a private plane by a business executive. The figures are surprisingly small in view of the service obtained.

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SOUTHERN AVIATION

Volume 1 August 15, 1930 Number 12

The Cost of Operating a Plane by a Business Executive

By Leon Booth

WHAT would be the probable cost of maintaining and operating the average cabin plane—including pilot's salary and expenses—for a business executive? Would not the total cost be such as to outweigh even the admitted great saving of valuable time for the executive who makes many long trips? Such questions are often asked, and perhaps sales are sometimes lost because authoritative answers are not available.

Some light may be thrown on these questions by a careful survey of the ten-months' record of a cabin plane used by Arch Haynes, president of the Haynes Drilling Company, Shreveport, La.

John Van Buren, pilot, and the Haynes company's Ryan

On July 17, 1929 the writer delivered to Mr. Haynes a Ryan Brougham B-5 powered with a Wright 300 motor. It was his first airplane and on the delivery date I doubt if he had ever ridden in a plane more than twice before. He had admitted that he was afraid of planes and wouldn't have one if it were not for the fact that his company, one of the largest independent drilling organizations in the Southwest oil fields, was badly in need of his services in widely separated areas during a period of a few hours.

Mr. Haynes had been visiting various activities by automobile. This type of transportation necessitated not only a great deal of time but it kept him in a tired condition when he should be feeling fresh and ready for a day's work.

Before approaching Mr. Haynes in the interest of selling him an airplane I knew that it was a case of letting him sell himself. My plan worked and a few months after my first contact with him he was ready for delivery.

In a period of approximately 10 months the Haynes Drilling Company plane has cost $5,646.92. This is actual cost kept by the company's auditor's and is correct to the exact penny. This figure represents a cost of $564.69 per month. At first this amount may seem somewhat high to the average person. But let us see what this includes: Insurance, $805.83; gas and oil, $1,209.17; repairs, $227.45; pilot's expenses, $302.20; pilot's salary, $2,837.50; storage, $264.77; and the total cost of operation for 10 months, $5,646.92.

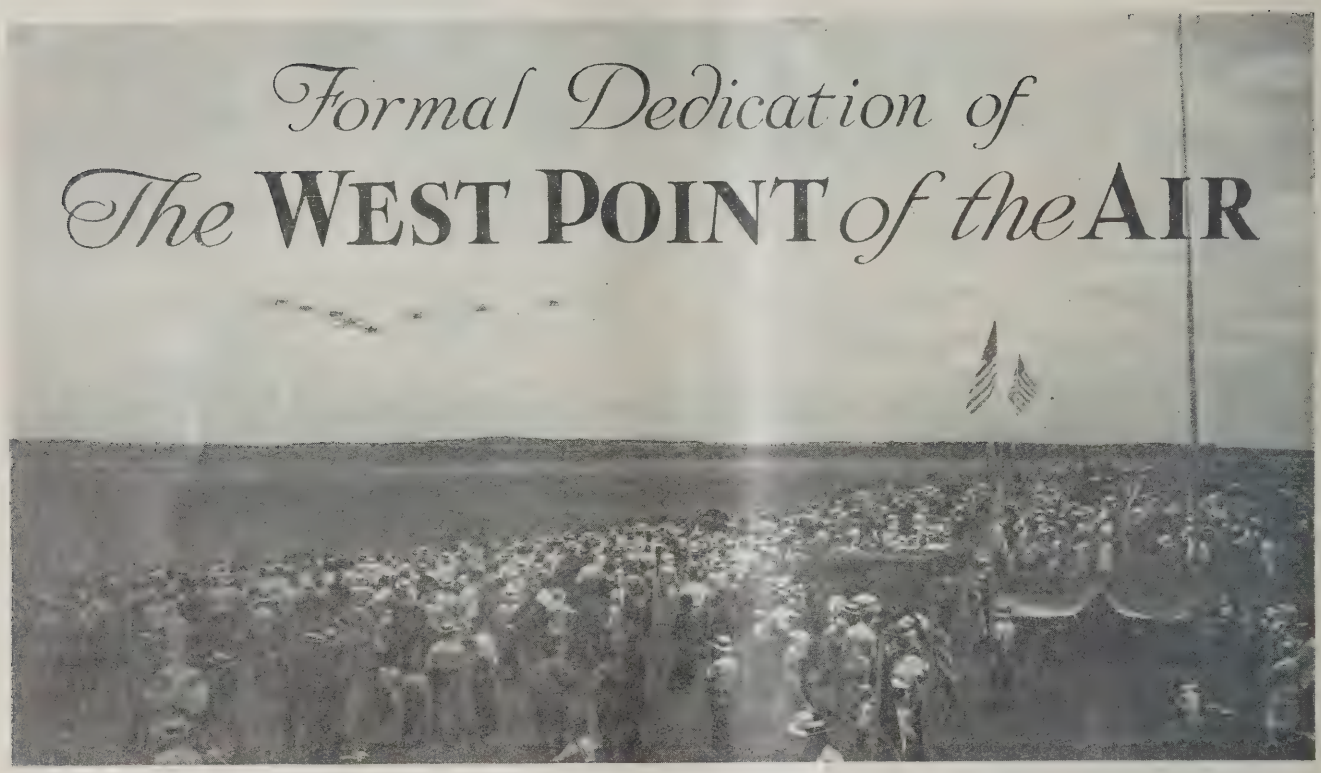
Mr. Haynes employs John Van Buren, a first class transport pilot whose sole duty is to keep his plane in condition to fly at any time on a few seconds' notice. The cost of operations includes the very best of everything for both pilot and ship. The plane is always stored at night.

The repairing item includes repainting of the plane. The only motor repairing necessary was replacing spark plugs, and that merely as a safety precaution. In other words, Mr. Haynes has flown his plane with a special pilot and equipped to carry as many as five passengers and a pilot for $21 per hour of actual operation.

The plane has a total time of 268 hours and 30 minutes at time of this writing. It has flown approximately 23,875 miles. The plane has carried 290

(*Continued on page* 20)

Formal Dedication of The WEST POINT of the AIR



Observation planes passing in review during Randolph Field dedication. U. S. Army Air Service photo

"RANDOLPH FIELD will be developed into the greatest military plant in existence and will turn out the best trained aviators in the world."

This statement, voiced by Maj. Gen. James E. Fechet, chief of the Air Corps, in an address before more than 15,000 persons assembled at the spectacular dedication ceremony of the airdrome June 20, indicates the important role to be played in future aviation by the mighty "West Point of the Air," now under consruction 16 miles northeast of San Antonio, Texas.

The dedicatory exercises for the "West Point of the Air" extended over a period of two days and were sponsored by military officials and directors of the San Antonio chapter of the National Aeronautic Association, the San Antonio Chamber of Commerce and the San Antonio Junior Chamber of Commerce.

The first day's program, conducted at Randolph Field, embraced addresses by high ranking military officers and prominent San Antonio citizens who so ably assisted in the realization of the field, a huge aerial review of 233 army airplanes, and was concluded that night with a banquet for aviation leaders and distinguished visitors.

The following day the activities shifted to Kelly Field where a most impressive aerial demonstration was staged in connection with the graduation exercises of the Air Corps Advanced Flying School. Ninety-seven students were in the class.

Governor Dan Moody delivering an address

It is quite generally known at this time that Randolph Field was named in honor of Capt. William M. Randolph who was killed in an airplane accident at Gorman, Tex., Feb. 18, 1928. The crash occurred when the officer's ship slipped at an altitude of 500 feet.

Besides Gen. Fechet, speakers at the opening ceremonies at Randolph Field included Bishop W. T. Capers; Col. W. B. Tuttle, reserve officer and chairman of the San Antonio Chamber of Commerce military affairs committee who served as master of ceremonies; Mayor C. M. Chambers, who delivered the presentation address; Brig. Gen. Frank P. Lahm, commanding the Air Corps Training Center, and Governor Dan Moody.

Gen. Fechet, in accepting the field, declared the government appreciated the generosity of San Antonio in giving the airdrome. He said there were other cities more prosperous who were working to secure the field. However, he declared, San Antonio was successful because of its sincere efforts and the fact that a man who knew San Antonio was the head of the Air Corps.

The next phase of the program was a flag-raising ceremony presided over by Mrs. Cornelia Randolph, widow of Capt. Randolph. She was as-

sisted in the ceremony by Gen. Lahm. As Mrs. Randolph hoisted the flag, the first gun of a 21-gun salute boomed down the field. With the flag at the top of the mast. Mrs. Randolph and Gen. Lahm stood, motionless, until the final gun had been fired.

Col. Tuttle, a guiding spirit among the civilian forces working for the airdrome, told in simple narrative the history of Randolph Field. It was a story of persistent effort, opening with the year 1926 with the first thoughts of additional flying facilities for the army, and closing with the progress of the field to date.

Major General J. E. Fechet, first to sign the official register at Randolph Field

Gen. Lahm in his address, "The Mission of Randolph Field," said that the guiding principles in the plans for the construction of the airdrome was the concentration of all air corps flying training in one place under one command. When completed, he said, the field will have a capacity of 500 planes and necessary personnel, and will be able to handle the training of 1,100 new students each year.

"Training of 350 new officers for the Air Corps of the regular army, annual replacements for the regular army and the training of qualified Air Corps reserve officers, are only a part of what is expected from the field," Gen. Lahm said.

"The Air Corps requires a reserve of 12,000 reserve flyers in civil life, always available for active duty in case of emergency. We can never expect to train all of these reserve officers, but must depend on commercial aviation producing flyers who in time of emergency can be given military training which will fit them for service with the Air Corps.

"Randolph Field, however, must provide the additional officers required for the regular army of the Air Corps. These additions, plus replacements, plus 550 reserve officers on temporary active duty with the army represent some of the obligations to be filled. It is a large contract, but Randolph Field was planned to fulfill a large contract."

The general spoke of a bill, passed by congress in 1926, providing for a material increase in flyers, enlisted men and airplanes, and for two additional assistant chiefs of the Air Corps. Also of the organization that year of the Air Corps Training Center and the coordination between the schools at Kelly and Brooks Fields. The curriculum was rearranged so that all flying training was given in the primary school at Brooks Field and only specialized training in military aviation at the advanced school at Kelly Field.

"An eight months' period of training was institu ted at the primary school, and a four-month training period at the advanced field," Gen. Lahm said. "This system was to replace the former method of training six months in each of the schools. A material improvement resulted from the change."

Gen. Lahm said it soon became evident that the two San Antonio schools were not sufficient to

Main entrance to Randolph Field showing portion of area under development. Photo by U. S. Army Air Service

meet the requirements of the five-year program. that is, the act of July 2, 1926, with a result that a second primary school was established at March Field, Cal., which was to be only temporary established in California and was to be moved later to Texas.

"At that time," Gen. Lahm declared, "it was planned to secure a new field in the vicinity of San Antonio to house the primary school from California and the fields of Brooks and Kelly were to continue with their same functions.

"It became apparent that the division of Air Corps training into different fields was not economical or efficient. The inefficiency was increased with the addition of the California school. Including the training center headquarters, it involved four separate headquarters with four separate commanding officers and their staffs.

"It was easy to see the training would never be as efficient as training on one field under one head. I therefore recommend to the chief of the Air Corps that instead of providing a new field for the California primary school, a field be secured which would house the entire training center."

Gen. Lahm then said his plan was approved in March, 1927, and recounted events leading up to the establishment of Randolph Field.

In his address concluding the ceremony. Gov. Moody declared that San Antonio now holds the future of the United States in her hands. "It occurs to me," the governor said, "that the future of our whole country may depend on a well-trained Air Corps. All that we are to become may depend on the men who are trained on this field."

In the half hour that followed, 233 military planes passed overhead in various formations. The pilots included members of the graduating classes of both Brooks and Kelly Field, as well as officer personnel from those two airdromes and from Dodd Field, Fort Sill, Fort Crockett and March Field.

An airplane-view description of the "West Point of the Air" was given by Lieut. A. W. Marriner of Dodd Field, who served as observer in the radio-equipped plane. It was the first time in San Antonio a radio program was broadcast from an airplane, and was one of the few times it had been done in the United States, it was said.

All the leading visitors were guests at the banquet that night on the roof of the Gunter Hotel, climaxing the first day's program A feature of the banquet was a flight of three ships, their under-wing surfaces illuminated with red, white and blue electric lights. Several times they flew over the roof garden in line, in V formation and in echelon, while the lights changed colors or were switched on and off.

Congratulatory telegrams from President Hoover, Will Rogers, Senator Hiram Bingham of Connecticut, president of the National Aeronautic Association; Patrick J. Hurley, secretary of war; F. Trubee Davison, assistant secretary of war for aviation; Congressman Harry Wurzbach of Texas and others were read at the banquet.

The secon day's activities at Kelly Field were as equally successful as those at Randolph Field. Hundreds of airplanes, representing many kinds of military fighting craft, zoomed and dived in acrobatic stunts and flew in inspiring formations in one of the most spectacular exhibitions of aerial maneuvers to be staged as part of the graduation exercises of the Air Corps Advanced Flying School.

The largest throng ever to witness a similar exhibition attended the affair, as there were thousands of persons present. While not so large as that which gathered at Randolph Field, the crowd nevertheless flanked the roadside a half mile each side of the main reviewing stand.

Briefly, the aerial program included a review by all the students, individual combats by three students of the pursuit section, formation landings by the student body and simulated combat together with acrobatics and balloon bursting by three pursuit in-

(*Continued on page* 22)

A portion of the building area at Randolph Field. This photograph shows construction work in progress on officers' quarters. Photo by 22nd Photo Section, Army Air Corps

10,000 Hours *In the Air*

By A. P. Cooke

Captain A. B. McMullen, pioneer Southern flier who has passed his ten thousandth hour in the air.

THERE are those who say that the South is backward in aviation; but there are others who will rise promptly to remark that the South has produced and maintained even more than its share of hardy pioneers of the flying game who have carried on to deserve a place in their particular hall of fame.

At some precise moment during the month of June, one of these southern pioneers passed, officially, his ten-thousandth flying hour—10,000 hours of feet on rudder bars and controls in hand, in every conceivable type of aircraft from old-fashioned Jennies to modern trimotors.

That man is Capt. Alexis B. McMullen of Tampa, 33 years old, modest in bearing, quiet of speech and pilot extraordinary.

Ten thousand hours! It is equivalent to more than 20 years of average piloting, or to 25 record-breaking endurance jaunts of the St. Louis Robin It is, as any airport hanger-on can tell you, equal to air travel of more than 1,000,000 miles, or 40 times around the earth—by one man.

Most of the time while these seemingly endless hours were spent aloft, Capt. McMullen was teaching others to fly, including those who learned about tail-spins from him during his three years of army instructorship, from 1917 to 1920.

There are, undoubtedly, in the south today many ex-army fliers who remember while at Souther Field, Georgia, a slender young chap with a set jaw and steel-blue eyes, wearing the escutcheon of a captain, who taught them their aerial flip-flops.

That was "Mac" in those days, and at Souther Field he had reached the pinnacle of instructorships of the time—teaching stunt flying. Just how he rated this honor is another story.

Perhaps his greatest pride of accomplishment in giving others their wings came last year when his air college graduated four young men from as many Central American countries, sent to Tampa by their home governments to learn aviation. Grateful were these governments for the good job done, and a few weeks ago the President of Honduras conferred a gold medal on Capt. McMullen for having transformed one Jose Sandino Aguilar from an uncouth Honduran mountaineer into a finished American pilot.

Not all of the 500 fliers trained by McMullen were men, by any means. There has been a goodly sprinkling, here and there, of the representatives of the so-called weaker sex who have mastered the art of non-skidding turns to the satisfaction of Department of Commerce examiners.

Miss Alice Mills, formerly of Daytona, and the first Florida woman to receive a pilot's license, was McMullen-trained, as well as Miss Barbara Bancroft, of Melbourne, Florida, who finished as a regular limited commercial pilot, which put her on the same footing as many a man in the air industry.

"Women," Capt. McMullen will tell you, "are more difficult to teach than men, because it takes them longer to accustom themselves to the air element, but they often turn out better pilots than men.

"Their biggest trouble is in orientating themselves—acquiring a sense of direction. Frequently, in early primary instruction, I have asked them to point out the location of the airport, and even though we may be right over the field at the time, they will scan the horizon in all directions and even peer over the side for a familiar landmark.

McMullen's ships on the line ready for a day's operation s at the Tampa airport

"But when they have learned, they are generally careful, conservative pilots, with a good sense of timing and with an unusual smoothness in their use of the controls.

"The youngest student I ever had was a boy just 16 and the oldest was a retired business man of past 50, and both made good fliers."

Back of his 10,000 hours in the air are three words, which form the first, last and absolute creed of Capt. McMullen's flying. Those three words are: "Don't take chances." It seems to be a workable creed.

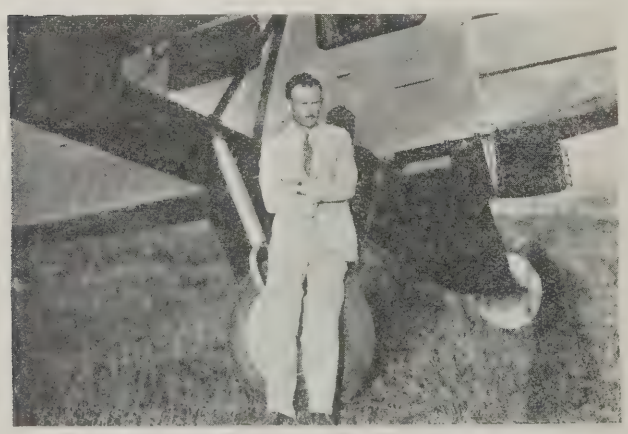
There are two subjects pertaining to aviation about which Capt. McMullen will never argue. One of these is the safety of air travel. When this subject comes up, he merely shrugs his shoulders as if to say: "Look at me," and the matter is ended.

The other is the question: "Can anyone learn to fly?" His answer is an emphatic and characteristic, "Why, certainly!" And his record of 500 successful students seems to bear out that theory, too.

In his official capacity, "Capt. Mac"—as he is known to friends, students and employees alike—is president of the McMullen Aircraft Corporation and president of the McMullen Airways Corporation, both with headquarters in Tampa, although their operations have recently been extended to include operation of the new riverside airport in South Jacksonville.

He is what the business magazines might call a flying executive, but even though he and his enterprises have passed, like many others, into the sphere of incorporated big business, Capt. McMullen, like his Atlanta cronie, is a flier first, last and all the time.

When the war clouds gathered in 1917, young McMullen, scarcely out of his teens, was in the University of California and enlisted in the army school of military aeronautics. Upon graduation, he was transferred to San Diego, where he finished his flight training, was classed as a pursuit pilot, and recommended for the job of flying instructor—a vocation which he has not yet relinquished.



Captain McMullen and the giant "Mac Airliner," which he designed and built in Tampa

It used to be said in the old army days that when a man was good at instructing, no matter whether it was fitting footwear to mules, or explaining higher calculus, he might just as well give up hopes of spectacular advancement. Through some mysterious powers, the good instructors were always kept at teaching, regardless of their other military qualifications.

Whether this applied in Capt. McMullen's case is not exactly known, but at any rate, 1918 saw him not over the lines in France, but teaching army fledglings to take off and land at San Antonio, Dayton, Newport News and lastly at Souther Field, where he was officially ranked as Instructor in Aerobatics —a swank term applied to stunt flying.

Barnstorming days: Captain McMullen looping an old Standard with trapezist hanging below the wing

Those who have seen Capt. Mac's graceful wingovers, his symmetrical loops and perfectly executed Immelmanns or spins—while flying by himself for the pure joy of flying—do not wonder that he was selected as an acrobatic teacher.

When it appeared in 1920 that America was about to enter on an era of commercial aviation, Capt. McMullen resigned from the army and purchased two or three old Jennies . With this stock in trade, and with the keen instincts of a showman, Capt. McMullen operated from Pennsylvania to Florida in barn-storming expeditions, giving shows at county fairs, carrying passengers from pastures, prairies and backlots and fulfilling all of the legends and lore of the aerial troupers who flourished in those days.

"At that time," he says, "we had to fly to eat. There was many a close shave between a crack-up and a meal, but the meal always won."

The routine of one-night stands became monotonous, and with a former army buddy, Bob Shank, who had recently quit the air mail service, they set up in business as the Shank-McMullen Aircraft Company, operating a school and general aerial service at Huntington, W. Va. Success crowned their efforts, and the firm was rated among the ten largest aerial operators in the country.

Even a flier can get Florida sand in his shoes, especially when landing on dusty runways. The lure of the sunshine state, where flying can be done

(*Continued on page* 22)

Views of Lovell Field, Chattanooga's Splendid New Municipal Airport

At the right are shown the hangar and the well-designed administration building at Lovell Field, recently completed municipal airport at Chattanooga, Tenn.

Left: An aerial view of the field and buildings taken a few days before the opening. Visiting pilots pronounced it one of the best in the South.

Right: This photograph showing the field lighted for night flying, was taken during the dedication ceremonies on the night of July 3 when the field was officially opened. The field was designed and equipped for an A-1-A rating.

The Development *of* Dallas *as an Aviation Center*

"WE MUST help aviation grow." This has been the watchword of the air-minded section of Dallas' citizenship during the years that have passed since Lindbergh's flight brought the possibilities of commercial flying into the public eye.

With steady determination the air mail had been pioneered in the Southwest and a program carried forward including acquirement and control of Love Field by the city of Dallas and the establishment of numerous commercial flying interests, some of them transcontinental operators, together with several aviation schools, in that field.

Later still came the establishment of the Curtiss-Wright flying field at Grand Prairie, 14 miles west of Dallas, with commercial airport and training school facilities. Came, also, the designation by the Eighth Corps Area, U. S. Army, of Hensley Field, 10 miles west of Dallas, as a Reserve Officers' training field and likewise the North Texas base for army flights from the numerous other army fields in the Lone Star State.

Suddenly, this spring, came the awakening to the fact that by helping aviation, Dallas had been helping Dallas. Flying activities, though admittedly still in their infancy, contribute in payroll alone, their hundreds of thousands of dollars annually—more than a half million to the upbuilding of the North Texas metropolis.

In a review of the development of commercial flying in Dallas and vicinity, for the six months ending March 15th, 1930, the aviation committee of the Dallas Chamber of Commerce, said:

"The annual payroll in Dallas, derived exclusively from the aviation industry, is now on a basis of $601,478."

In a recent interview, it was said at the Chamber of Commerce that another $40,000 might safely be added to this total. Investigations, conducted by SOUTHERN AVIATION in Dallas and vicinity, give adequate confirmation to this statement.

Dallas, principally through Love Field, has become a recognized terminal port, rather than a port of passage. With a city a passenger and mail center for the Southwest, the payroll disbursements are but a fraction of the immense sum being contributed annually to the welfare of the community. Purchase of supplies and other expenditures run the total well into the millions of dollars.

As most of the statements made in the recent report of the Dallas Chamber of Commerce hold good as of today, extracts from it will be freely quoted. Giving its authority for conclusions drawn, the report said:

"Figures as to payrolls have been obtained from the operators by the Aviation Department of the Dallas Chamber of Commerce. The information is specific and in most instances is authenticated over the signatures of executives. Where this is not the case the information was conveyed verbally after check-ups."

The list of aviation activities centering in Dallas early in July includes the following:

Airplane Operators

Southern Air Transport Corporation with its allied companies, which, though maintaining its general offices in Fort Worth, centers its flying activities around Dallas.

The Army Air Corps.
Southwest Air Fast Express.
Delta Air Lines.
National Air Transport.
Western Air Express.
International Air Transport.

Wedell Williams Air Line, which while basing at Fort Worth maintains service connections at Love Field.

Schools

Curtiss-Wright Flying Service, Inc.
Dallas Aviation School.
Texas Aero Service and College, Inc.
North Texas Flying School.
Woodall Flying School.

Factory Branches

Fairchild Airplane Manufacturing Co.

Miscellaneous

Eagle Motor and Machine Works.
Good and Foster Airport and Service.
Magnolia Petroleum Company.
Standard Parts Service (Kinner Motors).
Van Cleave Airplane Company.
McBeth Brothers, parts and machine shop.
Fairchild aerial surveys.

What They are Doing

Southern Air Transport, with 130 permanent employes at the time of the interview, has handsome and commodious operations office, machine shops and hangars at Love Field, in charge of P. D. Lampert, assistant operations manager. Seven ships each way, or a total of 14 flights, base here. The shop is one of the finest in the United States, and recently has made application to the Department of Commerce for certification as an approved service station. Its facilities for overhauling and repairing any type of airplane motor or plane are said to be complete.

It is the authorized agent for Wright Motors of Texas, and operates from this base scheduled passenger and mail lines to Atlanata, New Orleans, and Houston, via the Gulf Coast Air Lines; also the Dallas to Brownsville and Dallas to Galveston run. The Texas mail line operates under the name of Texas Air Transport.

Passenger lines operated include Dallas to Tulsa and Kansas City; Tulsa to Oklahoma City; Dallas to El Paso; Dallas to Brownsville and Dallas to Houston, with a leg from Houston to San Antonio. All save the last go via Fort Worth and serve both cities, though the plane terminus is at Love Field.

This group of flying interests has flown more than 4,000,000 miles, since starting its scheduled operations, without a single passenger being injured, and with but one pilot injured and he not fatally. No mail or other cargo has been lost. The payroll at Dallas is approximately $400,000 a year, while expenditures of all types in Dallas amount to more than $1,000,000 a year. S. A. T. now is handling about 3,000 passengers a month over the system, about 70 per cent of them in and out of Dallas.

The Delta Air Lines, Inc., which recently have taken over the Davis Air Lines in Atlanta, maintain a representative at Love Field in the person of H. E. Quimby. It operates one ship daily in and out of Dallas, giving connection to Louisiana points and the Southeast.

Western Air Express has two ships based at Dallas and operates two routes out of the Good and Foster airport, one over Division Six, via El Paso to Los Angeles and Pacific Coast points the other via Amarillo, Texas, to connect with the Mid-Continental Air Express for Denver, over Division Five. This company, which claims the distinction of maintaining the longest daily flying schedule of any commercial company in the world, flies 15,000 miles a day in all divisions. Its Dallas personnel at Love Field includes a contact man at the field, a district passenger agent and two radio men. A Western Electric phone station is to be installed soon, while a short wave code station radio installation was made in mid-June to maintain station to station communication, handle weather reports, ship movement information and general company business.

The Safeway Line, as Southwest Fast Air Express is known, while maintaining headquarters in Tulsa, operates six planes daily, three each way, from Love

An aerial view of Love Field showing hangar line and industrial section. U. S. Army Air Service photo.

S. A. T. headquarters at Love Field

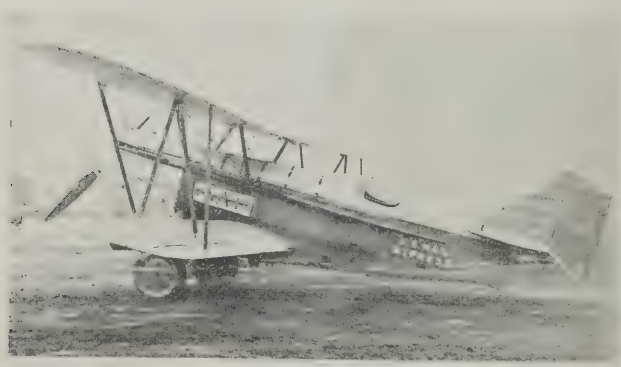
Field, and maintains an office force consisting of J. W. Cantwell, traffic manager, and a stenographer, in addition to a mechanic, and a bus driver who transports passengers to and from the field and the business section or hotels in Dallas. Its activities center at the Good and Foster Airport.

International Air Transport operates between Dallas and Houston on a passenger schedule and flies one ship each way, permitting business men to spend several hours during the middle of the day in Dallas and return to Houston before nightfall.

One of the most important elements of the field, as yet unmentioned save in the general listing, is the National Air Transport, at present devoted entirely to mail carrying. In addition to Charles B. Braun, district commercial manager, who maintains his office, with a stenographer, in the Dallas Chamber of Commerce building, this concern normally maintains eight employes at Love Field and owns the hangar from which it operates, the ground on which it stands and its own tank for gasoline. Its field force consists of Christie McCormick, field manager, a clerk, a radio man, four mechanics and a night watchman. In addition, four of the eight pilots, operating between Dallas and Kansas City, live in Dallas. Two planes into Dallas and two outgoing are operated every day.

Prophetic of the future and the expansion of the air mail are figures made public by Mr. Braun on the operation of air mail over his company's lines during the first six months of 1930 as compared with the same period of 1929. In the half year of 1930 19,872 pounds of mail was carried, as compared to 14,036 pounds for the same period of 1929, or a net gain of 41 per cent.

Even to attempt to outline the United States Army



One of the fleet of Curtiss Falcons used by N. A. T. in flying mail and express

activities in and around Dallas would require an article in itself. While Love Field has been the base, in the past, of North Texas flying operations for the army, with First Lieut. Harry Weddington as commanding officer of Love and Hensley fields, the latter field is rapidly coming into its own with construction of hangars, etc., under way. The importance of army traffic may be gathered from the fact that between May 26 and June 18 over 200 ships were in Love Field, 110 of them in two days.

A complete account of the opening of Curtiss-Wright Field was carried in a recent issue of SOUTHERN AVIATION and, while satisfactory progress has been made in its further development, this story may be taken as closely approximating its present day activities.

Reverting to Love Field, such incidents as the recent graduation of a large class of students from Dallas Aviation School, which maintains three hangars, has three flight instructors, two ground instructors, five mechanics and two in the office force

Pilots recently graduated by Dallas Aviation School

and year-round average of 70 students; the opening and dedication of the new hangar and airport of Good and Foster, complete account of which is given elsewhere; and the announcement by Magnolia Petroleum Company that its present filling station equipment, in charge of L. N. Crannell with two assistants, with two large trucks for servicing planes, soon will be replaced by a commodious hangar and service building 240 x 80 feet, costing approximately $50,000—these and many other things simply are indicators of the great future of aviation in and near Dallas.

Fairchild Aerial Surveys, one of the outstanding photographic organizations of the country, operate in the Southwest from headquarters in Dallas and maintain their own hangar at Love Field, as well as a completely equipped office and laboratory in the downtown business district.

Love field now is under complete control of the City of Dallas, the manager, Preston Sneed, recently having been reappointed to the position. A city control and gasoline tax law recently enacted created considerable newspaper discussion, but seemingly has been accepted finally. This ordinance placing a tax upon schools, gasoline sales and transport companies, is expected to produce revenue of about $36,000 a year, to be devoted to maintenance.

(*Continued on page* 18)

Points to Remember
When an OX Conks

By Ralph Greene

VETERAN pilots agree that the OX motor, when properly serviced, is very reliable. It has been facetiously stated that this motor is the best automobile motor ever used in an airplane. However, even though reliable, the OX motor has its occasional troubles.

With the advent of the more expensive radial type motors of sixty or more h.p., the popularity of the older type of motor has progressively diminished. OX motors, however, are still being used in rather large quantities, often in the hands of beginners who, perhaps, for financial reasons, are attempting to build up flying hours with less expensive equipment. It is the aim of this article to show the course of action that should be followed in the event that some defect in an OX motor crops out during actual flight.

All users of OX motors should realize the necessity of regular and adequate service of the engines on the ground. Inasmuch as OX motors are being used by many pilots who have not had broad flying experience, it is presumed that a bit of information about the characteristics of the motor in flight, if properly understood, might enable the user to act with more confidence, less apprehension and with less frequent tendency towards forced landings. The main thing to bear in mind is that one must be able to associate engine trouble with its causes and be able to act accordingly.

One of the most disconcerting experiences in one's early hours of piloting, particularly in cross-country flying, is the consequence of lowered oil pressure. Usually if the oil pressure drops, it drops suddenly. This means, of course, that the oil level is low, but this fact should not cause undue alarm. A landing field should be selected at once, but incidentally, one must also concentrate somewhat upon the care of the motor.

The ship should be nosed down steeply so that the oil, such quantity as remains, will flow forward to the pump and thus go back into circulation. Repetition of this nosing down process will enable one to stay in the air for a period of at least fifteen to twenty minutes without causing serious injury to the motor, and thus the prolongation of flying time may be the means of locating a suitable landing field and avoiding a crack-up. It should be remembered that in anticipation of mechanical trouble the pilot should habitually fly with an altitude of one to two thousand feet in cross-country flying.

Consider the case of a punctured carburetor float. There are definite circumstances pointing to this particular engine failure. The motor loads up on gas, R. P. M's. decrease, black smoke shoots from the exhausts and the motor heats up very rapidly. In the case of a pilot with limited cross-country experience, the sudden ocurrence of a punctured carburetor float will probably cause as much or more panicky apprehension than any other unrecognized engine complication.

With the trouble properly recognized and evaluated, one may fly more or less indefinitely with a punctured carburetor float by the simple expedient of cutting off the gas, allowing the carburetor to run dry, then cutting the gas on again and allowing the carburetor to fill up until black smoke again shoots from the exhaust stacks and then again shut off the gas. The process may be repeated until a suitable landing field is found or even until one's destination is reached. A punctured carburetor float is not of necessity an indication for an immediate landing unless the territory beneath the ship is entirely favorable.

In the early hours of cross-country flying one is inclined to concentrate deliberately upon detecting the indications of a missing motor. After hours of experience in flying cross-country one does not think consciously of motor noises, but reaches a point, due to habit, wherein the occurrence of a miss immediately attracts attention. Aside from the noise of missing, the motor loses much of the traction power and demonstrates an increased degree of vibration.

Motor missing may be caused by several things. If the miss is one of regularity, the cause may be a loose wire, a fouled plug, or a badly pitted magneto point. However, if there is an irregular, staccato noise, the trouble may be traced to water in the jets, or more likely to a dry intake pull tube.

Care must be taken to keep the hold-down straps on the intake pull tubes properly aligned and lubricated. A skip caused by a dry intake pull tube will not necessitate a forced landing, but the tube should be serviced as promptly as possible.

As a safety measure, one should have the toggle arm pin in the carburetor soldered into position. Safety wires are not dependable. Vibration will cut them, in time, and with the subsequent falling out of the toggle arms there will occur an excessive flow of gas and the same general, alarming signs as those of a punctured carburetor float will result.

As to magnetos, the Berling is probably the most widely used for OX motors. The most satisfactory assembly, however, for this engine is the Berling

(*Continued on page* 22)

Washington's Model New Airport

By
T. Carroll
Vice-President of Washington Airport, Inc.

Above: Passengers enjoying the comforts of the well furnished waiting room at the model new airport in the national capitol. Below: An aerial view of the passenger terminal showing modern layout for passengers' protection and convenience. Photos copyrighted by Thomas D. McAvoy.

THE new Washington Airport, at Washington, D. C., claims the distinction of being one of the most ideally situated airports in the country, through the fact that it is only two miles from the business center of the city. A short drive from the Treasury Building, regarded as Washington's center, through beautiful Potomac Park and then across the highway bridge over the Potomac River—and there you are at the airport. They have a saying that the airport is the easiest in the world to find as the Washington Monument is its marker. The monument is located at one end of the bridge across the Potomac and the airport at the other.

The site of the new airport was occupied previously by the track and show grounds of the National Capital Horse Show Association. These grounds and some swampy areas which are now being filled comprise the airport. The field is approximately quandrant in shape and consists of 108 acres. The longest runway, fortunately, lies in the direction of the prevailing winds. The runway is approximately 2700 feet long.

When the field is filled, which is progressing rapidly, it will be an "allway" field. In a restricted sense this is so at the moment, but constructively speaking, the cross runway which, when completed, will be 2200 feet long, lacks about 200 feet of this length. The uncompleted area is in the direction of very infrequent winds and fortunately, too, all winds paralleling the shorter runways are usually of 15 miles an hour or more. The surface is a solid field of porous material provided with partial subsoil drainage, which provides a smooth, hard surface under all conditions.

The hangar, which is newly erected, as the first unit of the hangar system, is of an entirely fireproof construction and of a most attractive architectual design. The hangar is provided with an excellent refueling service of the most approved sys-

tem, oil storage in a fireproof wing of the building, and a most complete engine overhauling shop equipped with facilities to properly repair and maintain enginess. The personnel of the mechanical force has been selected with extreme cars.

The hangar has been laid out some distance from the station administration building in order that the noise, dirt and confusion of the hangar operations would not annoy passengers and others at the station.

Pilots' club containing rest room, "first aid" and inspectors' room. Photo by Thos. D. McAvoy

The station, which is located on the short private road between the two highways, and close to the head of the highway bridge, is not alone one of the most attractive airport buildings but is also one of the most complete and efficient. It provides on its main floor a waiting room attractively furnished and equipped with every convenience for the comfort of the traveler. Telegraph, telephone, hotel and transportation information are at hand. Rest rooms and lavatories are provided. An excellent restaurant serving delicious food at all hours of the day, from a sandwich to a full dinner, is conducted in one wing of the lower floor. A baggage room with individual lockers for packages, parachutes and flying gear is provided. Street cars and bus line pass by on several routes, and taxi cabs and field bus are continually available.

The observation deck is on the second floor where an excellent view, not only of the airport but of the Potomac River, Potomac Park and a vista of Washington, may be had. The second floor also houses the administration offices, operation manager's office, and control room as well. The control room, semicircular in shape, faces the field and from it the operations clerk may view every movement of aircraft on the field. A complete service provided by the weather observation service located on the top of the Administration Building, is transmitted to the public through a most attractive weather information board in the waiting room. Upon this board, in addition to the station clock, are indicators of wind direction and wind velocity, also continuous records of barometric and thermometric information. On the board, also, is a bulletin of weather conditions on the airways in all directions out of Washington.

The control of a volume of traffic, which already frequently occurs, through the handling of the sight seeing flights, is provided so that passengers may be handled without confusion, or without their feeling that they are being "herded."

Visiting planes are handled in a manner which has already elicited considerable favorable comment. The private owner may leave his airplane at the station, give his instruction for service, etc., on printed service orders and may go to the station

This photo shows the location of the New Washington Airport with reference to the city. The field is only two miles from the center of the business district. Photo by Joe Roberts.

building preparatory to going into town and rest assured that his airplane will be taken to the hangar, put away for the night or for service according to his instructions, and will be brought back to the station awaiting his departure at the hour he specifies.

Another attractive feature which has been installed for the convenience of the visiting pilot, as well as for the field staff, is the Pilots Club, which is located close to the station. This building houses a comfortable waiting room with chairs, writing, tables, couches, lavatory and bath. This building also houses the office of the Department of Commerce inspector and a complete first aid room.

The Washington Airport is operated by the Washington Flying Service, Inc., who have carried many thousands of sight-seeing passengers over the Nation's Capital and who also provide a complete flying service for charter and cross-country trips in the hands of a competent sales force.

The Washington Airport is the designated terminal for the New York-Baltimore-Philadelphia and Washington Airlines, which will begin operations during the summer with tri-motored Stinsons, running on hourly schedule at railroad fare. Several other lines are contemplating using this attractive

The station at night. Photo by Thos. D. McAvoy

terminal, and it is bound to be a junction point for all eastern lines of air transportation.

Night flying equipment is being installed and will be completed during the summer. During the first month of operation, over one hundred visiting airplanes of every type have visited the field and many complimentary remarks and letters have been received, not only relative to the convenient landing field, but also concerning the excellent service which is being afforded visiting planes. The latter is a point of honor with the operators of Washington Airport, who have as their slogan, "Give the customers what they want, the way they want it, when they want it."

The Development of Dallas as an Aviation Center

(*Continued from page* 12)

The Dallas Chamber of Commerce, through its aviation committee, of which Mike R. Fewell is sec-

The fireproof hangar. Photo by Thos. D. McAvoy

retary, continues its excellent work in cooperating with aviation in all of is branches, which in the past has proved effective in the advancement of the industry locally and throughout the Southwest.

Recognition of the growing importance of Dallas as an air center was given by the United States Government Weather Bureau when it announced the establishment, as of July 15th, of a weather bureau in the administration building at Love Field. John A. Riley, assistant metereologist, recently of Atlanta, has associated with him in this office Clayton F. Thullheimer, assistant meteorologist, transferred from Toledo; James H. Ferguson, scientific assistant, transferred from Washington; Malcolm C. Harrison, junior meteorologist, transferred from Richmond, Va., and Doland M. Hester, assistant observer, Dallas.

The bureau will rank with that in Atlanta in service to aviation in the provision of complete reports on weather conditions. Data assembled by it will be broadcast by radio from the Department of Commerce station at Fort Worth. It will cover the territory between Kansas City on the north, El Paso and Denver on the west, Houston and Galveston on the south, and Memphis on the east.

Weather reports for this area will be collected and disseminated every three hours, day and night, with established air lines receiving the information on teletype machines.

"I have no hesitancy in saying that the future outlook is promising for the industry, no matter what it may be for individual operators. Out of the uncertainties of today will come a more perfect system of air transportation," said a well informed operating executive recently.

"It is impossible to look into the future and predict with any assurance what will transpire. All anyone can say is that, based upon progress made during the last few years, aviation affords a marvelous opportunity for improvement which undoubtedly will effect changes as great and unforseen as the progress made up to now would seem when compared with the situation existing but a few years back.

"Dallas has laid the groundwork for full measure of participation in this advancement and for logical growth both as a terminal and an important way point in the aerial traffic of the future."

The Airplane *as a* Medium *of* Sales Expansion

ONE of the strongest corporation converts to aviation, not as an accessory but as an integral part of its organization, is the Texas Pacific Coal and Oil Company, which has its headquarters in Fort Worth.

This concern has operated its own airplane since early in 1928 and no reasonable circumstance could cause abandonment of the vehicle. It is used in direct selling, to create good will and to command publicity.

Actual dollars and cents comparison of operating costs and returns is not available, but executives of the company are convinced that the airplane is bringing them continuous profit and that it is directly or indirectly responsible for business that could not be obtained otherwise.

The T-P. company is operating its second airplane, a Stinson, Jr., powered with a Wright Whirlwind J-5 engine, which went into service last July. For about 14 months prior to that time the company operated its own Ryan Brougham. To date its pilots have flown more than 1,000 hours. The Stinson on March 22 had completed its 363rd hour, and in that period of service had undergone one top overhaul. There never has been a serious accident or personal injury in a T-P plane.

The pilot is a salesman and he travels alone. Since the airplane was added to the public relations activities of the T-P company, it has visited 39 states, spreading information about T-P motor products.

Samples are carried by the salesman-pilot, but his most important task is contacting jobbers and airports and demonstrating by a continually piling up mileage that an airplane engine using T-P's Aero oil is trouble free.

So important does the company deem the trouble-free record of its missionary plane, that the salesman-pilot is under positive orders never to stunt, never to take any chances, and to stay on the ground when conditions are unfavorable.

Nevertheless, the plane is in the air most of the time.

In a report filed by Pilot G. A. (Buddy) Jones, as of December 31, 1929, it was revealed that the Stinson Jr. now in use had then been in service 166 days. In that period were 109 days on which it had taken the air. No flights were made on 57 days but on only 16 of these 57 days was the failure to fly due to weather conditions. The average daily mileage was 104.82. Engine hours totaled 224 and time in the air totaled 208 hours, at an average speed of 95.81. This gave a total mileage of 21,750, on which gasoline mileage was calculated at seven and one-half to the gallon.

The salesman-pilot spends about three days a month in Forth Worth. The remainder of the time finds him cruising the country. His movements are reported by telegraph and recorded graphically on a map with thumb tacks and thread.

All the important meetings of jobbers are attended by the flying salesman, as are all special technical and aeronautical gatherings and events which offer an opportunity for T-P to make itself known.

The airplane is not used for transporting employes or officials of the company. In fact, there is an iron-clad order that no employe other than the salesman-pilot, and no member of any employe's family, shall ride in the company ship. This order not only prevents joy-riding, but also prevents any abuse of priviledge and fends off jealousies.

There is, however, one exception. Under certain conditions the ship may be impressed into service by the company's geological department for making surface observations.

Although company passengers are barred, the passenger-carrying possibilities of the ship are by no means neglected. In fact, since the T-P took to the air, it has furnished rides to some 700 or 800 guest passengers, and the new Stinson Jr. plane had carried 212 passengers on December 31.

These passengers are the customers and friends of jobbers, to whom the privilege of offering rides in the T-P ship is freely extended.

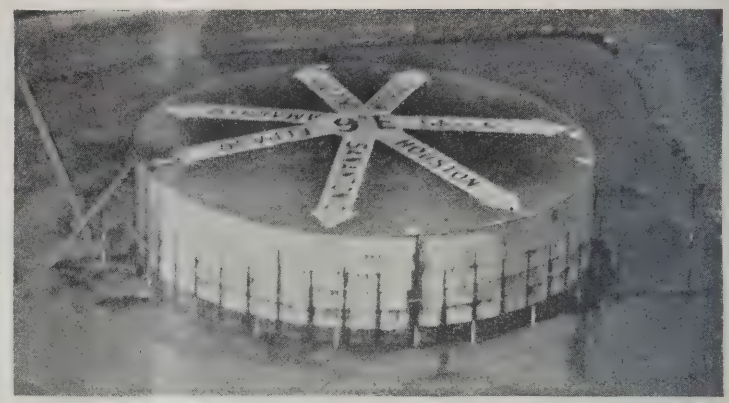
Curiously enough, this policy has aroused no antagonism among the pilots who hop passengers at the airports.

An official of the company explained:

"Seventy-five or eighty per cent of the people we take up for rides have never been up before. Our closely guarded reputation of never having an accident encourages them to leave the ground for the first time under the protection of T-P. Many of them get the air fever from the first experience and become regular customers of the flying field excursion operators. We help them to increase their business while we are increasing our own prestige and good will."

The official revealed that the Texas Pacific Coal and Oil Company feels that its airplane has identified it with the growing aviation industry. And this identification carries with it a selling prestige.

"When our salesman-pilot sets our ship down neatly on the field, swings around and taxies up to the hangar deadline, he brings forward his credentials and his introduction convincingly before he has said 'Hello.' And when he talks about what his oil will do, there is no suspicion that he is either a greenhorn or a mere parrot for the sales manager. They know he knows his stuff."



Cross roads of the air—a T-P oil storage tank

Texas Pacific Coal and Oil's plane participates in aerocades and was a successful participant in the national reliability air tour. The company backed Reg L. Robbins and Jim Kelly in their endurance flight which broke the record established by the army's "Qustion Mark."

"Queen of the Aerocade" and the T-P Ryan which led the Fort Worth aerocade into West Texas

The Cost of Operating a Plane

(*Continued from page* 5)

passengers in 208 flights. Thirty-eight trips have been made between Shreveport and Oklahoma City; six trips between Oklahoma City and Tulsa; fourteen between Oklahoma City and Roxanna, Okla.; four between Shreveport and Fort Worth; four between Shreveport and Nashville, Tenn.; as well as trips to Austin, Texas; Jackson, Miss.; Shawnee, Akla.: Enid, Okla.; and various short trips around Shreveport.

Pilot Van Buren has never had a forced landing with the plane—has never even as much as scratched a wing—although he lands his plane alongside oil wells in the oil fields.

Traveling by automobile between Oklahoma City and Shreveport requires more than twelve hours of fast and furious driving, while the plane flies the same distance in three hours, thus saving Mr. Haynes more than nine hours of very valuable time each way on each trip. And not only does it save time but when the occupants of the plane arrive in Oklahoma City from Shreveport they are in a refreshed condition and ready for work

In several instances the plane has been used to fly to Oklahoma City and obtain certain tools and return them to wells being drilled in the vicinity of Shreveport. It required little more than six hours for the round trip.

At first Mr. Haynes was not at all thrilled over the prospects of airplane transportation. Today he is a devoted aviation enthusiast.

Paul C. Jackson, manager of Curtiss-Wright Flying Service, Houston, Tex. Photo by Bachrach

The Requirements for Municipal Airports

IN AN address before a recent meeting of the League of Texas Municipalities, Paul C. Jackson, of Houston, Southwestern manager of the Curtiss-Wright Flying Service, pointed out the need of more and better municipal airports in the Southwest and outlined the standard requirements for them. He stated that airports are as essential now for air transportation as docking for ships and railroad stations and terminals for railway trains, and that the towns and communities that provide adequately equipped airports will prosper from air transportation.

Much interest was shown by representatives of the towns and cities in that part of the address of Mr. Jackson which dealt with the specific requirements for airport development, as it seems that practically every city in the Southwest is now preparing to increase its airport facilities or to build new airports. Many of them have voted bond issues for that purpose, or are planning to vote bonds in the near future.

Mr. Jackson impressed the league that an airport is more than just a landing field, and gave these as basic requirements:

Suitable Landing Area. The airport should be smooth, the surface should be firm, well-drained, approximately level, without obstructions presenting hazards in taking off or landing, and with suitable approaches. If suitable area is not available for landing and taking off in all directions, there should be at least two landing strips not less than five hundred feet in width and crossing at not less than 60 degrees angle.

The landing area should permit landing and taking off under almost all kinds of weather conditions and in case the surface of the ground will not permit use in wet weather, runways should be constructed with some hard-surfacing material. These runways should not be less than one hundred feet in width and constructed in such manner that in case of a plane landing across them, there would be no danger of damaging the plane. The edges of the hard-surfaced strip should be level with the balance of the landing strip and not crowned too high. The maximum slope of the landing area should not exceed two and one-half per cent and the mean slope should not be over two per cent.

Freedom From Obstructions. This is the most important item from the safety angle. The height above the sea level must always be taken into consideration. The allowable safe climbing ratio at sea level is seven to one and at 8,000 feet it is fourteen to one.

In other words: At sea level, a plane must leave the ground 350 feet before encountering an object 50 feet in height, in order to clear with safety; while taking off of a field at 8,000 feet above sea level the plane would have to leave the ground at least 700 feet in front of an object 50 feet high. Approximately the same ratio applies while landing; likewise the length of the landing strips must vary with the height above sea level. At sea level, in no case should this strip be less than 1,800 feet in length and at 8,000 feet it should not be less than 3,500 feet long.

Some thought should be given to the territory immediately surrounding the airport location. There should be a minimum of high lines, tall buildings and smokestacks, thickly settled parts of town, river bottoms or swampy lands that might cause fog to be present on or near the airport. It should be so located that a plane taking off in the direction of the prevailing wind will not have to pass over country where a forced landing would be dangerous.

Accessibility. The airport should be located on a good road leading to the city. Considerable thought should be given to the distance from the heart of the city.

Wind Direction Indicator. The airport should be equipped with an indicator twelve feet in length, thirty-six inches in diameter at the throat and twelve inches in diameter at the tail. It should be so located that it will be visible at all times from the air. .

Markings. One of the most important markings is the circle in the center of the landing area. This should be not less than 100 feet in diameter, having a band not less than four feet wide. This circle should be constructed of crushed rock or concrete and in all cases it should be white or painted chrome yellow. It must be flush with the ground so that no hazard will be made. The name of the city should be placed near this circle or on a building with sufficient roof space to permit the letters to be not less than ten feet in height. White or chrome yellow paint should be used with a black background.

The outline of the landing area that is usable should be marked with metal cones, crushed rock, concrete or some other suitable material and should be painted the same as the circle. These markers should not be more than 300 feet apart. Any part of the landing area that is not safe for landing should be marked by red flags through the day and red flags or lanterns at night.

Runways. These should be constructed of material such as crushed stone, concrete or other wear-resisting material and should be not less than 100 feet in width. The edges must be so constructed that taxi-ing, landing or taking off across the runway will not be dangerous.

Drainage. The landing area must be well drained. However, in case of good natural drainage, no artificial drainage will be required.

Fuel, Communication, Transportation and Personnel. The airport should be equipped with facilities for supplying oil, gasoline, water and drinking water. It should have good communication and transportation facilities to the city. An attendant should be located on the field or be available by telephone.

A location near a railroad was advised, both to assist the pilot to locate the field and to facilitate transportation between the air and railway services.

Mr. Jackson stated that with the right facilities for caring for airplanes and the public, and with unnecessary expenditures eliminated, airports should produce a fair return on the investment, whether municipal or private, and that they should be planned, constructed an managed with this in view, cutting out costs and expenses that will not produce a definite return.

10,000 Hours in the Air

(*Continued from page* 10)

for 12 months in the year, was too strong for Capt. McMullen to resist and in 1925 he sold his Huntington interests and moved to Tampa.

Here began the present widespread activities of the McMullen Aircraft Corporation. These were the Florida boom days. Business was brisk in photographing subdivisions-to be, carrying prospects hither and yon, and with a busy Sunday afternoon of passenger-hopping thrown in for good measure.

Growth came slowly, bases were moved as new fields were available, and in 1928 the McMullen enterprises moved to the present Tampa Municipal Airport, with 240 acres of landing area, hangars, shops and offices in big-time style. It was a far cry from the days of cow-lot aeronautics.

Just as everything was seeming to break right, as 1929 was closing with a record of 77 licensed pilots graduated from the McMullen school in the previous 12 months, fire broke out in the steel hangar at the Tampa field on the night of December 13, and when the smoke had cleared away, thirteen airplanes were a charred and twisted mass of ruins. Most of these were Mac's!

If anyone ever "took it on the chin" at a time like that, it was McMullen. He surveyed the debris without outward sign of emotion, but within 48 hours he was again doing business at the same old stand. Two brand new training ships were produced from a warehouse, uncrated, rigged and put on the line, and while there was still an odor of smoke in the air, these ships were soaring over the field with students and passengers, as if nothing had ever happened.

When an OX Conks

(*Continued from page* 15)

with the Bosch breaker assembly. Bosch points and springs seem to have the most satisfactory degree of durability.

There is just one final point, the importance of which can hardly be over-emphasized. A gas strainer should always be used; it should be a high-grade chamois skin, to insure that no foreign particles are reaching the gas tanks. As an added precaution, it is well to install deep jets and a gascolator, so that the accumulation of water, in small quantities at least, will not cause the motor to conk out.

Properly serviced on the ground and understood in the air, the OX motor, for those who must fly with it or not fly at all, will give reliable and reasonably safe air performance. It is a noteworthy fact that veteran pilots, while looking back wistfully, perhaps, to the days of OX flying, are, in the writer's experience at least, more or less unanimous in the opinion that the single magnetoed OX water-cooled motor is most serviceable for building up flying hours when practicing within gliding distance of an airport. Cross-country flying, unless the territory is extremely favorable, will be made more certainly with the newer types of airplane engine equipment.

Dedication of West Point of the Air

(*Continued from page* 8)

structors. Later these three officers engaged in a three-ship formation and drill.

In unison they looped in formation and rolled and dived and carried out other stunts from their bag of tricks that sent thrills into the ranks of the spectators. One of the most interesting proved to be a difficult maneuver in which the three ships flew upside down the length of the field.

The feasibility of dropping supplies and ammunition to marooned trops was ably demonstrated by nine ships from Brooks Field. Nine men were dropped by parachute, followed by three machine guns. The guns were unpacked, assembled and fired in three minutes from the time the first man jumped.

The exercises closed with a drill and tactical problem by 27 ships of the Third Attack Group. They fired dead bombs at a hut erected in the center of the airdrome.

Following the aerial program, the graduates assembled in the Aviation Club and were presented their wings and certificates of graduation.

News of the Southern AIRPORTS AND AIRWAYS

Formal Dedication of Tyler Airport

THE Tyler Municipal Airport, Tyler, Texas, was formally dedicated on June 28th and 29th with a celebration and program both colorful and thrilling. Fully 15,000 people attended the celebration each day, which was participated in by 77 planes and 115 pilots. A squadron of army planes from the 3rd attack Group, Ft. Crockett, under the command of Major Davenport Johnson, and 11 planes from Duncan Field. Kelly Field, Brooks Field and Dodd Field, of San Antonio, furnished the visitors excellent demonstrations of various types of formation flying.

The air events included dead stick landing, 100 horsepower race, 170 horsepower race, free-for-all race, stunt flying contest, women's stunt flying contest and parachute jump.

The first day's program of events was concluded with a sumptuous banquet at the Blackstone Hotel, attended by 200 aviation enthusiastes, and a dance at the Willow Brook Country Club following the banquet.

The Tyler Municipal Airport comprises 293 acres. The equipment includes a modern steel hangar, 100 by 110 feet, a solid concrete floor, restrooms and post office, also a 10,000 gallon gasoline tank with electrically controlled fueling equipment. The principal portion of the field has been clayed so that an all-way field is available, the principal runway, however, being 2500 feet long. In the near future the field will be equipped with revolving beacon and latest type of night flying equipment.

The Delta Air Service, operating between Atlanta, Ga., and Ft. Worth, Texas, provides Tyler with east and west transportation facilities. Tyler, with a population of 22,500, is the smallest city on this east-west line which is provided with air transportation, and is the only city between Shreveport and Dallas and Beaumont and Tulsa which has a modern airport. O. C. Palmer is manager of the port.

Southern Air Transport has modified its schedule on the Houston-Fort Worth passenger line to permit of connections at Fort Worth with the S. A. T. Fort Worth-El Paso line, the Wedell-Williams line from Fort Worth to New Orleans, and Southwest Air Fast Express. Under the new schedules, the Houston planes reach Fort Worth at 11:40 a. m.

Aerial view of the new Tyler, Texas, municipal airport during dedication ceremonies June 28-29. Photo by U. S. Army Air Service

Solution of Little Rock Airport Problem

AFTER nearly a year of investigation, negotiation and controversy, the city of Little Rock seems to have come to a solution of her municipal airport problem.

Just recently a lease was executed between the Board of Public Affairs and White Brothers, of Russellville, who a short time ago secured a five-year lease on the property of the United States Army Intermediate Air Depot. The sub-lease gives the city the use of the landing field for a period of five years at a rental figure of $250 per month, and the city will be required to keep the landing field in good shape and to maintain the equipment for use of the field at night. Lights on the field were installed by the war department before the air-depot was abandoned.

The lease as executed is similar to that signed by White Brothers, except that the city will not be required to maintain any of the buildings on the property keeping up only the landing field proper, which contains about 125 acres.

When White Brothers leased the property from the government, it was agreed that certain hangars would be reserved for the use of the 154th Observation Squadron of the Arkansas National Guard.

A bill is to be introduced in Congress by Representative Heartsill Ragon, giving the city of Little Rock an indeterminate lease on the field as soon as the lease held by White Brothers expires.

As the 125 acres in the landing field is not considered enough for an airport of highest classification by the United States Department of Commerce, it is expected that immediate steps will be taken to acquire additional acreage that adjoins the landing field and greatly increase the size of the field. The city has on hand a fund of $200,000 for such purpose, this having been voted in a bond issue several months ago.

Execution of the lease with White Brothers terminates efforts of more than two years standing in trying to secure a suitable site.

Elaborate Radio System Planned by Safeway

PLANS for an elaborate radio communication system calling for at least four ground stations and two-way radio apparatus on all transport planes, have been outlined by the Southwest Air Fast Express, Inc., of Tulsa, and actual work on the installation of the system was scheduled to be well under way by the first of August, according to an aannouncement by officials of the company.

The first of these ground stations —which will broadcast on a short wave frequency of 60 to 100 meters, using a piezo crystal control transmitter of approximately 50 watts capacity, with special heat control on crystal—will be located in Tulsa. Application has been made for permission to erect these stations, and Western Electric equipment for the entire system has already been ordered, the total cost of the completed system to be approximately $90,000.

H. A. Gibb, formerly with the radio division of the Transcontinental Air Transport-Maddux airlines at Columbus, Ohio, has been engaged by Safeway as radio technician and has already assumed his new duties. Work will go forward on construction of the other stations as soon as the Tulsa station is finished and approved by Gibb.

All Safeway transport ships are to be equipped with both transmitting and receiving equipment, two radio receivers to each ship—one of intermediate frequency for weather and beacon service, and one of high frequency for two-way communication. Ordinarily, the co-pilot will act as radio operator, although either pilot can operate the equipment and both systems may be used at the same time. A generator connected to the engine will furnish radio transmission power, and will also be used to charge storage batteries held in reserve for possible emergency use. Pilots will report their position to the ground station every 15 minutes, and weather reports will be sent them every 30 minutes—oftener when flying conditions are bad. Special maps are now being prepared to chart the course and location of all planes in the air. This communication system will also be at the disposal of the traffic department for directing pilots to land and pick up passengers.

The motor ignition wires on all Safeway transport planes are now being shielded to eliminate interference and permit long distance communication. As soon as the new equipment arrives it will be installed, and the two-way system will be in operation immediately.

The Chamber of Commerce of Oklahoma City, through the aviation committee headed by H. C. Martin, has joined the Brower Airlines Inc., of Omaha, Neb., in petitioning the United States post office department for permission to designate the Brower line from Oklahoma City to Omaha as an official air mail line. The Brower service is now operating a passenger service with a six-place cabin plane leaving Oklahoma City municipal airport every morning at 7:30 o'clock, arriving at Omaha 1:35 o'clock, the same day. A return ship leaves Omaha at 7:30 o'clock every morning, arriving at Oklahoma City at 1:35 o'clock.

New illuminated and flashing signs have been placed in banks, hotel lobbies, department stores and other public centers in Fort Worth, Texas, by the aviation department of the city's chamber of commerce. An assortment of the signs is being displayed in the picture by Miss Myrtle Newton (left) and Miss Eunice Richardson, chamber of commerce stenographers.

Formal Dedication of Lovell Field

LOVELL FIELD, Chattanooga's new municipal airport, was formally opened July 3. The dedication ceremonies were held on the night of the opening day, when the field was turned over to the public by Mayor Bass, Commissioner Cash and John Lovell, chairman of the Chamber of Commerce airport committee, for whom the field was named.

It is estimated that 20,000 Chattanoogans attended the opening for their first opportunity to inspect the grounds and terminal building and hangars, which were well lighted for the occasion. The new flood lights also were demonstrated for the public's benefit.

The field is located a short distance south of the city, near the Nashville, Chattanooga and St. Louis railroad. It is on the government's Chicago-Atlanta airway and is a regular stop on the Interstate air mail route.

The field is under the management of Curtis Holmes. Mr. Holmes announces that the field will be operated very much as are other municipal fields. There is no landing charge, as has been rumored, and the charges for storage, repairs and other services are at regular rates in effect at all first-class airports. The field was designed and built for an A-1-A rating, though the management does not intend to apply for this rating at once. Lights are not burned constantly at the field, though there will be an attendant present at all times should it be necessary to turn them on. The airport beacon light is burned throughout the night. An emergency ambulance, fire fighting equipment, emergency sleeping quarters, daily weather report and bureau office in the administration building are provided. A government radio beacon is being finished and will be in operation soon.

Aviators who visited the new field during the dedication pronounced it one of the finest in the South and praised it highly for its unusual beauty of surroundings and buildings. Many types of aircraft were landed on the field during the dedication and no difficulties were experienced.

A new highway leading to the airport has recently been finished and puts the field within easy access of the city.

New Airport Opened at Charleston, W. Va.

WERTZ field, the new municipally owned airport at Charleston, W. Va., a veritable oasis for flyers in a mountainous region of few landing places, was formally opened on July 4.

Dedication of the field marked the opening of a vastly wealthy industrial region to the conveniences of air transportation. It was the culmination of a three-year battle of city officials, manufacturers and aviation enthusiasts to place one of the most important chemical centers of the world on aviation's map.

Because of the expected rapid development of air transportation in West Virginia, the Charleston port site was carefully selected. Situated on an almost direct route from the North to large cities of the South, it was necessary that an airport that could accommodate an indefinite amount of traffic be selected. Proposed air-mail routes from New York, Washington and other points east with Charleston as a terminal also were taken into consideration in the selection of the port.

During the summer of 1929 the city acquired 150 acres of comparatively level land located between the Kanawha river and a range of hills about nine miles west of Charleston. Shortly afterward local citizens formed the West Virginia Airways, Inc., which was given the operating franchise of the port

One of the first moves of the new operating company was to acquire the West Virginia Air Service, Inc., an air taxi concern operated by Howard G. Mayes and others at Charleston. The equipment consisted of two Travelair OX5 ships. Two new cabin ships for transport work are to be purchased immediately.

Then a landing field 2,500 feet

Howard G. Mayes, Operations Manager for West Virginia Airways at Wertz Field

long and 1,600 feet wide was graded. All of this area is available at the present for landing and taking off. The field soon will be enlarged to 3,000 feet long and 2,750 feet wide.

Wertz field is the largest and best equipped flying field in West Virginia. Next to it in size is the municipal port at Bluefield, which is 600 by 3,300 feet. The field at Martinsburg, operated by the West Virginia National Guard, is 1,700 by 1,200 feet and the one at Moundsville is 3,000 by 800 feet.

The surface of Wertz field is hard-packed clay with a clay subsoil. It has been rolled smooth and oiled. Planes can land and take off on it during all weather conditions. The maximum slope of the landing area at any given point is two per cent The greatest slope extends toward the east. Although there is no drainage system at present, the entire 150 acres is to be tiled soon. The field is to be sodded next year.

The only flying hazards near the port are a water tank, 70 feet high, 500 feet east of the port's boundary, and a high tension line, 60 feet high, 1,500 feet west of the field. Both tank and line are marked. The landing area is not crossed by a road.

The field has a standard circle is the center, two wind cones, and the name on the roof of the hangar. All obstructions are marked chrome yelloy and black.

The prevailing winds of the section blow northwest.

The hangar is 80 feet across the front, 75 feet wide and 14 feet high. It is built of wood and steel trusses. The floor is of earth at the present time. A heating system is to be installed this winter.

The machine shop contains a crane, lathe, power drill, welding outfit, grinder and mechanics' tools. A blacksmith's shop is available, 1,500 feet from the hangar.

Sleeping quarters may be obtained two miles from the field. A lunch room is operated in the airport office building.

At the present one air line is operating from the field. It is owned

The above photograph shows the hangar and some of the planes at Wertz Field during opening celebration

by the Pocahontas Air Transport company of Bluefield, W. Va., and operates between that city and Charleston.

West Virginia Airyays officials are planning to open transport lines between Pittsburg, Columbus and Charleston within the next two months.

Although operations have not been started, the Mercury Air Lines of Cleveland are planning a line

Harold B. Shadle, president of West Virginia Airways

from their home port to Atlanta, Ga., touching Wheeling, Parkersburg, Charleston and Huntington, in West Virginia, and Knoxville, Tenn.

Harold B. Shade, of Charleston, is president of the West Virginia Airways, Inc. Management of the field is under Howard G. Mayes, of Charleston, veteran flyer of the World War. Mayes has been identified with aviation since 1918. At the end of the war, in which he took active part in aviation service on French and German battle fronts, Mayes entered commercial aviation as a hobby and later took it up as a profession.

Hubert Stark, ex-army flyer and formerly chief pilot of the Tri City Airways, Wisconsin Rapids, Wis., and the International Flying Service. Miami, Fla., is chief pilot and instructor at the field. Paul T. Miller, ex-army pilot and veteran aviator, will be assistant chief pilot. G. T. Clarke, of Charleston, formerly of the Heath school of aviation in Chicago, will be the technical instructor.

An aviation school is being conducted in connection with air taxi work and other commercial activities. Several students already have begun taking instructions.

Construction work on the new $42,000 building program of the Garland School of Aeronautics at Tulsa, Oklahoma, was begun on July 21. The expansion program when completed, will give the Garland airport four new hangars for the storage of privately owned planes and in addition a $37,000 aerial photographic department, according to Robert Garland, owner and founder.

Powerful New Beacon Lights on Louisville Bank

The Lincoln Bank & Trust Co., Louisville, has completed installation of powerful aero beacon lights on its roof, one beam of light, fixed, pointing to Bowman Field, and the other a revolving light. The latter is 8,000,000 cp. and the former is 1,712,000 cp.

A portion of the crowd watching arrival of planes for the opening of Wertz Field, new municipal airport at Charleston, West, Va.

Tulsa to Cincinnati Service Planned

An extension that would link Tulsa and Cincinnati with daily aerial passenger service by way of Arkansas and Tennessee recently by Jack Atkinson, manager of the Oklahoma Short Line Airways, Inc., now flying between Tulsa and Memphis

In preparation for the extension, the schedule time of the Tulsa-Memphis division was changed July 20, the Memphis-bound ship now leaving Tulsa at 8:00 a. m., leaving Little Rock at 10:30 a. m., and reaching Memphis at 11:45 a. m. West-bound, it leaves Memphis at 1:30 p. m., reach Little Rock at 2:45 p. m., and arrive at Tulsa at 5:00 p. m.

Atkinson announced the purchase of a new Cessna cabin plane by the line, which has already been placed in scheduled service.

According to the announcement, the line will continue from Memphis to Nashville, Louisville and Cincinnati, giving Tulsa its first direct aerial connection with either Nashville or Louisville. The line will also connect at Memphis with the Robertson airline, now flying between St. Louis and New Orleans.

Under the schedule for the extension, eastbound planes will leave Tulsa daily at 8:00 a. m., arriving at Memphis at 11:45 a. m., and leaving there at 1:30 p. m., arriving at Nashville at 3:30 p. m., at Louisville at 5:00 p. m., and at Cincinnati at 6:00 p. m. Returning, planes will leave Cincinnati at 7:30 a. m. and reach Tulsa at 5:00 p. m.

The fare from Tulsa to Little Rock is $19; to Memphis, $28.50; to Nashville, $44.50; to Louisville, $57.50, and to Cincinnati, $65.30.

The United States Airways has recently completed its new passenger station at the Salina, Kan., field, where the line's Denver-bound planes from Tulsa connect with its Kansas City-Denver ships, according to J. M. Knappenberger, general traffic manager of the United States Airways.

The second radio station to be established at Midland, Texas, airport has just been installed by Western Air Express, to work with its El Paso and Abilene stations. The army has been operating its radio station at Midland for some time.

Weather Report Service from Love Field

WEATHER report service from the new Government Bureau at Love Field, Dallas, went into effect on July 1t6h, following the arrival of John A. Riley, government meteorologist.

The service will be under the direction of Dr. J. L. Cline, local weather bureau manager. Reports from the bureau will be broadcast from the Department of Commerce radio station at Fort Worth on a three-hour schedule through the day and the service will cover the territory from Denver to Galveston and from El Paso to Kansas City.

Daily reports from bureaus at Amarillo, Corpus Christi, El Paso. Alvarado Del Rio, Galveston, New Orleans, Shreveport, Denver, Kansas City, Oklahoma City, Little Rock, Meridian, Mobile and Memphis will be received at the station here.

Assisting Mr. Riley and Dr. Cline at the bureau will be Clayton F. Van Holmer, assistant meteorologist, transferred from Washington, Malcom C. Harrison, junior meteorologist, transferred from Richmond, Va., and Donald M. Hester and Albert Hester, assistant observers of Dallas.

Radio Equipment Being Tested by E. A. T.

The first radio set to be installed on an Atlanta-New York mail plane is working satisfactorily, according to the pilots of Eastern Air Transport. Other planes of the fleet will be equipped with sets in rapid order.

The set, with battery, weighs only thirty pounds.

Hourly broadcasts of weather conditions are now being received by pilots along the New York-Atlanta airway from the airways radio station at Hapeville. Emergency broadcasts are made in case of important changes in weather.

In addition to weather broadcasts, the Department of Commerce expects to put the radio range beacons in operation shortly.

Portable One-Plane Hangars for Bowman Field

The Louisville & Jefferson County Air Board, Bowman Field, Louisville, has solved the problem of supplying civil and commercial hangar space, by contracting for the erection of six to eight one-plane, portable hangars, on the east side of the field, for use of planes owned by other than the Army or Curtiss-Wright, these being the only hangars on the field.

Short Wave Radio Stations on S. A. T. Lines

Operation of short wave radio stations in Fort Worth and other Texas cities by Aviation Corporation, through its subsidiary, Aeronautical Radio, Inc., has been announced at headquarters in Fort Worth of Southern Air Transport, which the new subsidiary will chiefly serve. It was added that the federal radio commission had authorized S. A. T. Flying Service to transfer its short wave radio license to Aeronautical Radio, Inc.

S. A. T. officials said that the ruling will permit the transactions of company business by radio and will also allow broadcasting of weather reports to planes in the air, as well as serve for dispatching activities.

Some of the larger S. A. T. and American Airways planes are to be equipped with radio sets as rapidly as they can be installed.

S. A. T. Flying Service now has radio sending and receiving stations in Fort Worth, Dallas, Waco, El Paso, San Antonio, Houston and New Orleans.

Local and Express Service Offered by Safeway

Both "local" and "express" service are now available to passengers of the Southwest Air Fast Express, Inc., on the firm's planes for Kansas City or St. Louis on the north and for Dallas or Fort Worth on the south, it is announced.

The plane leaves Tulsa for Dallas and makes the trip without a stop. Another reaches the Texas city by way of Oklahoma City, Wichita Falls and Fort Worth. Non-stop ships also fly out of Tulsa to both Kansas City and St. Louis, while local planes on the same runs stop at either Chanute, Kan., or Springfield, Mo.

Miami Christening of New NYRBA Liner

CHRISTENED "Miami" at formal ceremonies held recently at the Miami base of the New York, Rio & Buenos Air lines, a 33-place Commodore seaplane with 100-foot wing span has been placed in scheduled service by the air transportation concern on its Miami-Buenos Aires route.

Said to be the largest seaplane on any air line in the world, the Miami is powered with two 575 horsepower Pratt & Whitney Hornet motors, and is the tenth of a fleet of large seaplanes specially built for the company. Offering finer passenger accommodations than any other transport ship thus far developed, the Miami provides a lounge room, complete toilet facilities and dressing room, radio cabin, steward's quarters, a private baggage department and other details for the comfort of its passengers. It was constructed by the Consolidated Aircraft Corp.

A crowd estimated at more than 2,000 persons watched the christening of the plane on June 6, when R. H. McGlohn, divisional general manager for the air line, spoke in behalf of the company, and Mayor C. H. Reeder, of Miami, praised the initiative of the company in seeking to link the North and South American continents with safe air travel and spoke of its accomplishments since locating its northern base in Miami. Miss Mary Jo Cotton, daughter of Ernest Cotton, Miami city engineer, and a member of Miami's younger social set, christened the plane by breaking a bottle of ginger ale across the bow.

Describing Miami as the aerial gateway to South America, Mr. McGlohn spoke of the company's expansion since it had begun operations between Miami and Buenos Aires. R. V. Waters, president of the Greater Miami Airport association, and A. B. Turner, traffic manager for the northern division of the line, were other speakers.

The "Miami" recent addition to the NYRBA fleet of seaplanes

Airport Dedication Honors Pioneer Dallas Flyer

A FITTING climax to many years of effort in commercial aviation at Dallas, was witnessed on June 21 and 22 when the city government, joining civilian and military flyers, assisted in the dedication of the new Good and Foster $75,000 airport at Love Field. The all-steel and concrete hangar thus officially ushered into use, replaced a smaller wooden structure, destroyed by fire, along with several ships early in the year.

Arrangements for the celebration were made by the aviation department of the Dallas Chamber of Commerce, and Lieut. Josef Allen of that organization acted as master of ceremonies, in charge of the microphone on both days.

Rarely is such honor paid an individual as was received by Byron Good, who is owner-manager of the airport. However, it was felt by everyone who knows "B", as he is generally known, that "he had it coming" for the dogged tenacity with which he has held to his course in popularizing flying in Texas.

A native of Carrollton, Texas, Good left the farm during the war period, stood the tests successfully and was assigned to Love Field for training. A skilled flyer and plane mechanic at the end of the war, Good proceeded to make it pay him a living. Unlike many others, he decided not to quit the air but, leasing a hangar, he and his then partner, Foster, repaired many wartime planes, in between times carrying passengers, doing exhibition flying and the like to keep the old ship in gas and the feed bag filled.

Things were going well with Good when, early this year, fire swept the Good and Foster hangar, destroying it, together with the fifteen ships it housed. Friends rallied to his assistance and, as a result, the new hangar, of fireproof construction, 80 x 220 feet, capable of housing tri-motored planes, was built, together with an office building for the use of Good and Foster and the various interests which use the field. Underground gasoline storage and other facilities for servicing planes were provided, while

Byron Good

in a room at the rear of the hangar a machine shop equipped for aeromotive service and repair was installed by McBeth Brothers, of Dallas.

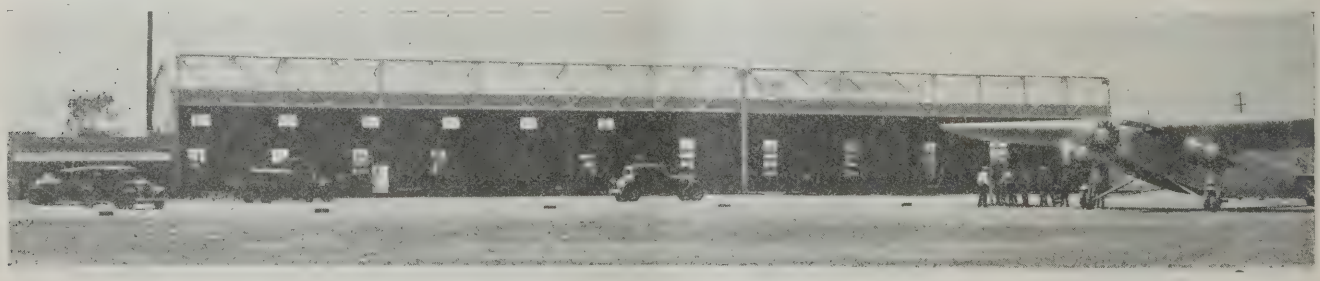
The Good and Foster hangar and office building now are the center of operations for the Safeway Air lines, the Western Air Express, Woodall Flying School, International Airways and the Wedell Williams Air Line. In addition, a number of privately owned planes based at Love Field use this port. In the matter of transient planes it is recognized as a base and from three to five transient ships are housed there every night.

Good and Foster operate three gasoline trucks and in addition to serving many of the transient, school and privately owned planes at Love Field, perform similar service for the United States Army planes stationed at Love and Hensley Fields and the planes used in the training of the Organized Air Reserve Officers for the North Texas district. This despite the fact that the army has its own hangars and houses its own ships. Good said recently that he had built his business by having the best grades of gasoline and any kind of oil that pilots might wish. The average monthly sales of this firm amount to approximately 50,000 gallons of gasoline and from 500 to 600 gallons of oil a month. Five employes are on the port payroll, exclusive of the forces of the plane line operators using it as a base.

Probably no other individual in the Southwest has played so large a part in building public sentiment in and for flying; certainly none has accomplished more. Therefore the general feeling in Dallas was that he was entitled to every form of assistance as well as every honor that the city, the flying industry, the United States Army and the City of Dallas could offer in joining in the dedication.

More than 100 airplanes were at the airport to participate in the flying activities, which concluded at 6 p. m. with several brief talks, the speakers including Homer D. Wade, vice president and general manager of the Dallas Chamber of Commerce, B. B. Owen, of the aviation committee of the chamber, and Maj. Jack Freeze, representing Dallas Flying Club.

Big Spring, Texas, is after an A-1-A rating and will spend $30,000 just made available through the sale of bonds, to get it. A commerce department official will supervise improvements, ordered at once at the Big Spring airport.



The new Good and Foster hangar at Love Field showing spacious entrance for tri-motored planes

Inspection Routine on Interstate Lines

THAT successful operation of an air mail and air passenger system depends as much if not more on the skill of expert ground mechanics, welders and other lines of work concerned with what is known as the ground crew, is shown in a summary of some of the inside activities of the operations of C. A. M. 30, Interstate Airlines air mail route between Chicago, St. Louis and Atlanta.

Few people realize that the department of commerce in Washington, D. C., requires a complete overhaul of a licensed airplane after every 1000 hours flying; complete overhaul of the motor after 300 hours use; complete inspection of the entire airplane after every 18 to 20 hours flying, and that every plane receives an inspection after it has made a trip on the Interstate Airlines routes.

The speed with which motors are changed in cases of emergency forms an interesting part of the ground activities of an airlines company, according to F. J. Hoyt, Interstate Airlines superintendent of maintenance. The other day the Atlanta mail plane arrived at Nashville at 11:40 a. m., mechanics at Tennessee's Sky Harbor began removing the motor at 11:45 a. m., and after only two hours and 15 minutes work, a new motor had been installed and the plane was being test flown above the Nashville airport, according to Hoyt. This is considered an exceptional record.

"Each mechanic takes a certain part of the job of removing and installing a motor and carries it straight through," Hoyt said. "In this particular instance there was no reserve plane at Sky Harbor to send out on the afternoon mail run, so we had to change the motor, have the ship tested and ready to leave on schedule, since the motor already in the plane had been flown 300 hours and the Department of Commerce requires the installation of a new motor at the end of that number of flying hours.

"Many interesting incidents occur within the activities of airline operations that the general public is not aware of," said Hoyt. "Sometimes a plane is slightly damaged in landing at an airport, and a reserve plane must be ready to continue the flight. Air mail and passenger schedules are maintained just as accurately as those on the railroads. A pilot must leave exactly on schedule, or turn in a report as to why he did not leave on time. Much of the romance is leaving the aviation industry, to be replaced by the more serious business of sound and profitable operation."

Reserve pilots are employed by Interstate Airlines for ferrying planes from one airport to another, wherever a reserve plane is needed. Oftentimes, an emergency calls for the immediate departure of a reserve plane from one airport for another where a plane has become disabled or motor trouble makes it necessary to have it repaired by the nearest airport mechanical crew. In this case, the pilot, if he has landed at an intermediate landing field along his route, immediately phones the nearest airport for mechanics and a reserve plane. The chief mechanic at the airport has a ship "warmed up" and, with mechanics aboard, they fly to the landing field where the mail ship was forced down. While mechanics work on the disabled plane, the reserve plane continues the flight with the cargo of mail.

The Interstate Airlines ground crew is considered one of the most efficient and skillful outfits of its kind in the country. Examples of the speed and success of their work in not only repairing planes and changing motors but in completely rebuilding either damaged planes or those which must undergo complete reconstruction after every 1,000 hours use, is convincing proof of their ability, it was said.

Headquarters of the Interstate maintenance repair department is at Tennessee's Sky Harbor, Nashville's air mail stop.

ABOVE is an aerial view of Hat Box Field, the army-municipal airport, at Muskogee, Okla. The field comprises 370 acres with the minimum effective landing area of 3000 feet and the maximum greater than 3700 feet. It is well-lighted, having boundary, beacon, flood and obstruction lights. The Army Air Corps operates a meteorological station and radio station. The municipal hangar is 100 by 115 feet. No landing fees are charged and free transportation to and from town is provided by the city. Photograph by U. S. Army Air Service

Recent Changes in Effect at Love Field

An asphalt strip 150 feet wide running the full length of the field will be laid at Love Field immediately, according to a recent announcement made by Preston Sneed, director of municipal airports.

Twenty-five workers from the city have been at work on the drainage system at Love Field. A number of additions are being made to this system to prevent the field from becoming muddy during heavy rains. Upon completing this drainage system, work commenced on the new asphalt strip.

The new regulations at the airport are in effect. All airplanes must be stopped on Sundays 50 feet from the stop signs and pedestrians are not permitted to walk beyond stop signs.

No airplane shall be turned around by its own power on the line, blowing dust through the hangars and in the faces of visitors, but must be turned by hand, according to the new field rules. The rules were drawn according to Department of Commerce regulations to prevent accidents.

Fort Worth's municipal airport is unsatisfactory, according to Marshall C. Hoppin, airport specialist of the U. S. Department of Commerce, who has just completed inspecting the field, recently criticized by trimotored plane pilots for its "hump." He would not discuss his report, to be made to Fort Worth's city manager, but intimated that the "hump" was objectionable. Hoppin was brought to Fort Worth to make an inspection and recommend a government rating for the field.

The new South Jacksonville Airport, Jacksonville, Fla., as it will appear when completely developed

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Passenger fares over Southern Air Transport System were increased one and one-half cents per mile on July 1, bringing the approximate cost of air travel on the company's lines to seven cents per mile.

The S. A. T. activities concentrated at Love Field, Dallas, were increased in July by the removal of accounting and purchasing departments from Fort Worth to Dallas. Executive offices of A. P. Barrett, president; C. R. Smith, vice president and general manager, and Silliman Evans, public relations director, remain in Fort Worth and were to be moved to the new Aviation Building on August 1. Unused space at Love Field will be utilized by the switch of location of the two departments, Smith said.

The Fort Worth-San Angelo route of Cromwell Airlines was discontinued July 11 until mail contracts are awarded under the Watres bill. The company continues its Big Spring-San Antonio passenger line.

Fort Worth's municipal airport earned a profit of $1,309.55 during the month of June, according to the report of Manager William G. Fuller. It showed $2,661.81 gross income; $1,352.26 expenses.

Aerial view of the new Curtiss-Wright airport at Dalworth, Texas. Photo by U. S. Army Air Service

NEW AIRPORT DEVELOPMENTS

Montgomery, Ala.—P. H. Tharpe, of Montgomery, has been awarded two contracts for improving the landing field at Maxwell Field. The contracts call for clearing, grading, and grubbing in preparation for further improvements of the field.

Little Rock, Ark.—Work has started on the old army flying field here recently leased for five years as a municipal airport.

Wauchula, Fla.—The local municipal airport is complete and will be dedicated on Labor Day.

Jaksonville, Fla.—Runways at the South Jacksonville air terminal have been lengthened to 3300 feet.

Brunswick, Ga.—Redfern Field, on St. Simons Island, has been leased to the United States Government as an intermediate landing field on the new air mail route between Jacksonville and Washington.

Bainbridge, Ga.—Two runways, 2500 feet long by 125 feet wide, have been finished at the local airport. H. L. LeGette is president of the private concern developing the field. The site comprises 185 acres and is within a half-mile of the city limits west of Bainbridge.

Forsyth, Ga. — The emergency landing field here is being enlarged. Grading is underway and lighting rearrangements will be made.

Middlesboro, Ky.—Development of an airport here is being urged by Captain F. E. Calloway, of Bowman Field, who has recommended to the Kentucky Air Board that plans of Middlesboro and Bell county for developing the field, be approved.

Marshall, La.—The city commission plans to purhase 211 acres of land four miles east of this city for development of an airport at a cost of $18,000.

Shreveport, La.—Contract for erecting an administration building, hangar, lighting system, beacons, wire fencing, curbs, walks, aprons, concrete work and acessories will be let soon following the closing of bids July 24. The administration building will be of three stories brick and concrete and the hangar all-steel.

Baton Rouge, La.—On a bid of $50,602, contract for erecting an administration building and hangar at the East Baton Rouge Airport field here was awarded to A. C. Stewart. Contract for the plumbing and heating on both buildings was awarded to State Plumbing and Heating Company on a bid of $2,156. Baton Rouge Electric and Machine Company was awarded the wiring contract on a bid of $3,600.

Natchitoches, La.—Bids have been called for construction of a brick and steel hangar on the municipal airport.

Greenwood, Miss.—The Leflore County airport was dediated July 7.

Columbus, Miss. — Owen-Bowlin Field, near the Owen greenhouse in the southern part of the city, will be opened soon.

Clarksdale, Miss.—This city has been designated a stop on the Robertson Airlines.

Meridian, Miss.—Contract will be let soon for a steel hangar and terminal building at the local municipal airport. The terminal building will be of brick and frame construction.

Durant, Okla.—The new airport here will be dedicated this month. Captain Ira Eaker, a native of Durant, will attend the ceremonies.

Tulsa, Okla.—A new hangar is under construction at the Garland School of Aeronautics, and complete aerial photography equipment is being added to the school's facilities.

Columbia, S. C.—The Columbia airport, loated 2 1-2 miles southeast of the capitol building, now has available for use an additional runway, laid out in the northwest-southeast direction, 2,312 feet in length.

Greenville, S. C.—The management of Greenville airport announces that the whole area of this field, a portion of which has been under construction, is now available for landing purposes. In thirty days the installation of lighting is expected to be completed.

Clinton, S. C.—Plans are underway here for establishing a municipal airport.

Sumter, S. C.—A hangar of two plane capacity will be erected at the local airport.

Knoxville, Tenn.—McGhee Tyson Field, Knoxville's new municipal airport, located 2.7 miles from the city, on the north side, adjacent to the Southern Railway main line, was dedicated with a two-day program August 1 and 2.

Knoxville, Tenn.—An airport on Dickinson Island is in operation. A bridge has recently been erected connecting the island with the mainland.

Chattanooga, Tenn.—Lovell field municipal airport here was opened July 3. A crowd estimated at 20,000 attended the opening ceremonies.

Houston, Tex.—A 24-hour weather service has been established at the local municipal airport on Telephone Road.

Tyler, Tex.—The 295-acre municipal airport was opened here July 1 and 2. The field is five miles west of Tyler on the West Dixie Highway.

Breckenridge, Tex.—A bond issue has been voted for establishing a municipal airport here.

Dallas, Tex.—Western Air Express has completed the installation of its radio station at headquarters at Love Field Airport. R. C. Hardeman of Los Angeles arrived in Dallas recently to begin his duties as operations manager.

Greensboro, N. C.—The local airport has been leased by Henry W. Rafus. Mr. Rafus succeeds Eastern Air Transport as operator of the field.

Marion County, W. Va.—A 40-acre tract near Boothsville, on the C. L. Shaver farm, has been leased for an airport.

Lawrenceville, Va. —A municipal airport has recently been opened here. Runways 1800 and 2000 feet are provided.

Charleston, West Va. — Wertz Field municipal airport here was opened on July 4. It is under the management of the West Virginia Airways. Howard G. Mayes is operations manager.

Danville, Va.—The Dixie Flying Service, who have leased the municipal airport here, have assumed charge of the field.

KEEPING THE PASSENGERS INTERESTED

THE pilot knows the terrain—the passenger would like to. Working on this theory with the radio department of Southern Air Transport, Jerry Marshall, S. A. T. operations manager, with headquarters at Dallas, Tex., evolved the flying miniature broadcast system, illustrated in this picture. A microphone in the pilots' compartment, ear phones at each seat and a regular schedule of conversation every 15 minutes or so, permits the pilot to share interesting information with the passengers, for their entertainment and comfort. Marshall contends an interested passenger rarely gets air-sick.

Aeronautical Personalities

Miss Irvin Expects to Fly Through College

IN THESE days when modern women are winning their laurels in practically every profession and activity formerly regarded by an old-fashioned world as "for men only," it is nothing unusual to see ambitious young ladies working their way through college.

It remains, however, for Miss Lula Blanche Irvin, pretty 16-year-old daughter of Dr. and Mrs. C. W. Irvin.

Dave Driskell (left) and Lula Irvin

Norfolk, Virginia, to open a new field for such activities of her sex with the avowed intention of flying her way through college.

Miss Irwin a few weeks ago successfully passed the physical requirements for student fliers laid down by the Virginia State Corporation Commission and enrolled as a student in the flying school operated by the Grand Central Air Terminal in Norfolk.

Now a member of the sophomore class of Maury High School, Norfolk, Miss Irwin and Dave Driskell, chief pilot of the airport, are both confident that long before she completes her high school course and is ready to enter college she will have her transport license.

Miss Irwin, who, so all her friends declare, could easily walk away with first honors in any aviation beauty contest, has no ambition to engage in ocean hopping, that pastime so popular some time ago with fliers of both sexes.

"All I want to know how to do," she says, "is to be able to pilot any sort of plane that flies, and fly it well enough to earn my transport license. With aviation becoming more and more popular, a girl pilot is nothing unusual these days and by the time I am ready to enter college I believe many of the universities will be giving a regular course in aviation. If I have a transport license then I feel sure that I can earn my college expenses by flying."

Miss Irvin has been interested in aviation "almost as long as she can remember." For several months she plead with her parents that they permit her to take lessons in flying. Their opposition faded away a few weeks ago when Dr. Irvin took his first airplane ride. Now he is almost as much an enthusiast as is his daughter and it is not unlikely that he, too, will enroll as a student flier in the near future.

Since enrolling for instruction, Miss Irvin has had approximately three hours of instruction. Driskell says she shows unusual ability as a flier.

First Baltimore Woman to Win Commercial Pilot's License

Miss Marion Clark, a Baltimore society girl aviatrix, has won the first limited commercial pilot's license ever issued to a Baltimore woman flier. Miss Clark was in training for the test since October, a year ago, with intermissions for a trip around the world. She took her private pilot test last year on June 1, winning the first woman's license issued in Maryland in close competition with half a dozen other eager would-be-aviatrices. Since then she has put in her 50 required solo hours for the commercial pilot's license.

Miss Clark is not content with the limited commercial pilot's license, but she aims to secure a transport pilot license. She regards flying as a good sport besides which everything else is commonplace and believes that aviation offers unusual openings in its various branches, to women who want to make a business of it.

Gray is Pioneer Radio Amateur Operator

F. E. GRAY, who is charged with the task of installing radio equipment in the fleet of 22 Eastern Air Transport air mail ships, is one of the pioneer amateur operators of the United States.

Back in 1917 when radio was as much a novelty as an airplane, he

F. E. Gray

was operating a transmitter from his home at Fulton, Ind., which attracted much comment from residents of northern Indiana on account of its range of 25 miles. In fact, radio at this time was novel enough to draw visitors from great distances to hear the Arlington time signals, which afforded a pleasant evening's entertainment of "tick-tick-tick."

While a student at Purdue University, Gray devoted a part of his time to research work in adaptation of radio to airplanes. He later went to sea. After four years' experience as a radio operator on ships, Mr. Gray realized his ambition of practical application of radio to air transportation through a connection with the radio division of National Air Transport, New York-Chicago air mail contractors. He flew approximately 15,000 miles during the installation and testing of radio equipment on the New York-Chicago line.

George E. Bounds has been appointed publicity director for Parks Air College and Parks Airlines.

Experiences in a Forced Parachute Drop

THE fact that aviation is becoming comparatively safe and that pilots can usually save themselves by the use of parachutes was thoroughly demonstrated at Love Field, Dallas, recently when C. R. Ward, instructor, and W. L. Phillips were thrown to safety from a spinning ship.

The plane after having been spun to the left, refused to right itself and turned upside down, going into an inverted flat spin. According to aviation authorities an inverted flat spin is something practically new in aeronautics and it is said that once a ship goes into a spin of this type it is impossible to bring it out.

So far as can be learned this is the first time in the history of aviation that an instructor and his pupil, after having been thrown to safety from a spinning plane, have conversed with each other while descending to earth.

Ward was giving his student, W. L. Phillips, a final check for a Department of Commerce license examination. They were practicing stunts required for the test (incidently performing one not required) about which Ward and Phillips tell as follows:

"Phillips and I were about 5,000 feet up and he had made two successful spins to the right," said Mr. Ward. He spun to the left and came out with his nose down, which is correct. However, instead of straightening out, the plane turned upside down in a flat spin.

"After Phillips made unsuccessful attempts to right the plane, I shouted to him, 'Give me the controls', which he immediately did. I made several efforts and by that time we had lost considerable altitude. Then I told Phillips to 'Jump like hell'. When he was well on his way I unfastened my belt, fell out on the wing and rolled off into open space.

"No, I did not count five before jumping. That counting business is all bunk unless you are making a premeditated jump.

"I craned my head a little and over my side, right at arm's length it seemed, was Phillips. Then I looked up and apparently on top of us, swinging back and forth, was the ship. And believe it or not, I yelled over to Phillips, 'Say, boy, you'd better pull those shroud lines a little if you don't want to be back in that ship like we were a few minutes ago.' We both pulled over to one side in order to get out of the way of the plane, which seemed in a pretty big hurry to get down.

"The next thing I knew I was on the ground. The first question asked

C. R. Ward (left) and W. L. Phillips

me was if I suffered a jar when I hit the ground. No, the ground felt very nice and soft. In fact, I was so glad to be on the ground again, conscious, that I said to myself. 'Nice ground! I'm so glad to see you.' "

And Phillips tells his reaction to the experience as follows:

"When the ship went into the flat spin and my instructor yelled for the controls, I was glad to turn loose all claims to flying the ship. Ward worked frantically with the ship. The stick between my knees moved back and forth, the rudders quivvered, but the ship did not respond to the touch. I heard the command to jump and looked up to the ground which seemed to be in the far distant heavens. Nevertheless I unfastened my belt with one hand, and held in a death grasp my parachute ring, with the other encountering some difficulty with the belt, but I could not bear the thought of turning loose that little ring in my chute.

"A thousand thoughts were whirling through my head: All this money wasted and pass out of the picture just when I could have been useful. wish I had feet on ground, etc. Just then I was instantly hurled out in the open space, turning over and over it seemed to me. The wind struck my face a traffic blow and then my chute came open.

"Glancing over I saw Ward at my side, then I heard him shout loudly and looked up to see the crippled ship over our heads. As I pulled the shrouds to one side I looked up only to see the ship coming closer and closer. Then the ship whizzed past me. We were almost to the ground and I called to Ward how pretty the green wheat field looked beneath us. I floated to a landing which seemed smooth enough as I remember it. When I put feet on ground I was proud of my experience. Not so bad, after all."

Lieutenant E. H. White, a member of the 24th wing headquarters at Kelly Field, joined the Caterpillar Club, July 15, when he jumped from his pursuit plane while north of Kelly Field, near the Fredericksburg Road.

Lieutenant Ed. Fee and Ellis Fagin have been promoted to First Lieutenants in the 154th Observation Squadron, Arkansas National Guard. This brings the number of promotions from second lieutenants to firsts to four. Charles M. Taylor and Lieutenant Adams were promoted the first of May.

Dorothy Hesper, the nineteen-year-old daughter of a Portland, Oregon, interior decorator, recently completed the first outside loop ever made by a woman. The feat was accomplished in a stock model Great Lakes Sport-Trainer, powered by an American Cirrus Motor.

Willard Morris, formerly of Standard Air Lines, Los Angeles, has been placed on the El Paso-Dallas run of Western Air Express.

A Narrow Escape From a Texas Sandstorm

By W. Loy Mitchell

Pilot for Dr. J. C. Connor, Hobbs, N. M.

I HAVE just seen my highest rolling sandstorm in nine years of Texas flying. I have not only seen it; I have felt it and run away from it. And in running, I just naturally traveled 55 miles in 18 minutes, landing included.

Somebody figured that out for me —but it seemed to me it would take more than three miles a minute to out-run that big brute of dust and wind. I figure we actually traveled 240 miles per hour on that ride.

We left Dallas about 6:30 on the morning of May 6, and flew out to Abilene and landed there to put a passenger on the S. A. F. E. line for Wichita Falls.

The wind at Abilene was pretty high, and had it not been necessary for Dr. Connor to get on through to Hobbs, I would have stayed there. We took off and the Lockheed-Vega came cruising on over Sweetwater at 140 miles per hour, but making only 70 miles.

Up to this time there was no sign of a sandstorm, except around the sandy fields.

We were landing at Big Spring to let another passenger out and at Colorado, Texas, I began to see the big sandstorm coming. It seemed to be a long way off yet, and I thought I could out-run it to Big Spring.

I was flying at 9,000 feet and when within about eight miles of Big Spring, or close enough to cut out the engine and glide on in, I began to see Big Spring swamped under the rolling cloud of sand. The sandstorm was just as high as I was, but I could see over it.

I watched it a minute or two, and then turned the tail of my ship to it, gave her full gun, put the nose down on a line with Sweetwater and let her out to the last notch.

The air speed was showing 180 and 190 all the time, besides the wind which for the last few minutes had been holding me back to about 65 miles per hour.

When I arrived over the Sweetwater field and came in to land, the hangar went out of sight in sand. Later the boys at the field said when I went down over the field they heard my motor, but could not see the ship at all and I was not over 500 feet from them.

However, this sandstorm at Sweetwater was just a local storm, and not the big fellow I was running away from. The big one came along presently and lasted for five hours.

When I found Sweetwater drowned in sand, I pulled out of that and went to the open, where I knew there was a clear spot, and landed. I landed downhill on about a 10 per cent grade, in order that the wind would not turn the ship over backwards or on a wing, and only ran on the ground 160 feet. My ship sat in that cow pasture until nearly dark. Then I moved it back to the hangar at Sweetwater.

I had a fine bunch of passengers —Dr. Connor, Mrs. Cliff Bruce, of Big Spring, and Harry Nunn, of Wing, the oil town in West Texas. Of course, they knew we were in trouble, but they did not get excited at all.

I landed and had been on the ground abbout 20 minutes when the big storm rolled over us and you could not see 30 feet in any direction. It was that way up to 9,000 feet, too.

Of course I had got the ship tailed into the wind and tied by that time.

Summer Activity of Tampa Aeronautic Club

Members of the Tampa Chapter, National Aeronautic Association, are keeping summer activity in local flying circles at the same height as during the winter months.

Among other things, there is a series of weekly "good will' air trips to cities within an hour's flight from Tampa, in which plane-owning members of the local chapter take part.

The first of these was held on June 26, when four Tampa ships journeyed 85 miles to Leesburg, Florida, to attend the first annual Watermelon Festival in that agricultural center. Leading the squadron was Jerome A. Waterman, president of the local N. A. A. chapter, who had the distinction of piloting Miss Margaret Ekdahl in the front seat of his Wright-Travel Air. In her official capacity as "Miss America"—won during a beauty contest last winter in Miami—she was the honor guest at the Leesburg fete.

Others to participate in the trip were Houston Wall and R. S. Evans, flying Monocoupes, and Hugh L. Woods, of the McMullen Aircraft Company, flying a Travel Air.

Parachute Jumps Bought Her Instruction

IN EXCHANGE for a flying course, or a portion of one, Mary Nicholson made three parachute Jumps. She says she was to anxious to learn to fly that she would have accepted almost any proposition.

She is still getting in flying time toward a limited commercial license when not engaged in her duties as bookkeeper in the Sternberg Childrens Hospital at Greensboro, North Carolina, her home. She now has more than 30 hours to her credit,

Mary Nicholson

which was made in flying Wacos, Pitcarns, Challengers and a Monocoupe. She has had a number of instructors including Earle Barnes, Henry W. Rufus, C. R. Coleman and Ed. Barringer.

Other than low finances and punk landings, she says enduring the tempers of these instructors was the most difficult part of her flying.

She is a member of the 99's, and says she intends some day to enter flying as a business.

C. A. Trump, of Tulsa, Okla., district sales agent for the Buhl airplane, has obtained the state agency for the Aeronca monoplane. Trump brought his first small Aeronca ship to Tulsa from Cincinnati, Ohio on July 20.

Clarence Clabaugh and **James Robb,** advanced students of the Spartan School of Aeronautics of Tulsa, are in Mexico City with a new Spartan cabin plane which they are demonstrating there.

Colin L. Smith, formerly with the Curtiss-Wright Flying Service at Detroit and Atlanta, has joined the Blevins Aircraft Corporation to develop the new flying club division.

Why I've Stopped Giving Free Plane Rides

By G. J. Ekstrom
Co-pilot, Pan-American Airways

MAYBE you have heard some of those yarns about good little girls who go automobiling with bad shieks and have to walk back to town from "somewhere away out in the sticks," but I am going to tell you one just a little different this time. It's about a girl who had to walk back from a plane ride, probably the first who ever did, and I was the one who ordered the exercise.

It wasn't because of a crack-up, either. It was for no other reason than that I was sore, plenty sore—mad clean through. I'm not usually hard-boiled, anyway with the fair sex, and when I get through telling you about it, I think you will agree with me that I had a perfect right to be sore on this occasion.

It was in the days of the old fashioned "Jenny." If you know anything about the make-up of a "Jenny," you know about the couple of pulleys in the back cockpit that we used in operating the controls. They were exposed, if you remember, and we always had to guard against things getting caught in them. I used to take off everything I figured would foul them when I rode in the back cockpit, and used to caution and watch my passengers to be sure they wouldn't get something mixed up with them.

All this happened at Daytona Beach, where I was doing some commercial flying at the time, and the girl I am telling you about used to come down to the beach, which I was using for a landing field, every day and asked to be taken up for a ride. She seemed to be just crazy to get off the ground. You have seen them that way, I suppose. Well, one day she came down to where I was fiddling around my plane, a day when trade was slack, and I got soft-hearted and told her I'd give her a ride.

She was wearing one of those long coats that were fashionable for women in those days, and right away I shied at the thing for I felt certain it was going to connect with one of those pulleys. I told her to take it off and that just started an argument. Finally she hinted that it was such a long step up into the cockpit that it would hurt her modesty too much to display her limbs.

So she talked me out of having her shuck her coat, and I told her if she would be very careful and keep it out of the pulleys, it would be all right. I made it very plain to her before we started, though, that our necks depended on her keeping her coat out of the machinery, and the thing worried me so I told her I would signal her if it did get caught, and for her to get it untangled then pronto.

Well, we got away at last, and I took the old "Jenny" up around 700

G. J. (Slim) Ekstrom

feet and headed along the beach. Everything was going fine and I glanced back a couple of times just to make sure my passenger was getting the proper kick out of the ride.

Finally I decided she had gone far enough for a free passenger and decided to head for home. I went into an easy bank for the turn and then the fun began. Just as I knew it would, that long coat fouled a pulley.

I squirmed around in my seat, and pointing down, jiggled my hand up and down so she would look down and see what had happened, and what do you think that dumb female did? Just put on her broadest and sweetest smile, nodded a time or two and kissed her fingertips at me!

We were breezing about in a circle like a merry-go-round and it suddenly came to me like a jolt in the pit of the stomach that we hadn't much gas.

I went into the deaf and dumb lingo again. I got real eloquent with my hands. I jerked my hand up and down like it was at the end of a pump handle to get her to look down in the cockpit, then I motioned like I was pulling something up from the bottom of the plane.

And her dumb highness sat there and simpered and smiled gave her hair a pat and kissed her fingers at me!

Well, we chased our tail for a while longer and I saw that unless I got busy on my dizzy passenger it was going to be too late to save a couple of necks and a "Jenny." I turned around and I tried more signals than the United States army ever heard of. I pointed down, I jerked a whole imaginary wardrobe from the bottom of that cockpit, and I tried making faces.

No use. She just sat there and simpered like an old maid hearing a proposal and kissed her fingers at me some more.

Finally after about six tries at the signalling game, it seemed to me her enthusiasm began to wilt. She seemed to be thinking, "Sure, I'm enjoying myself and I don't want to hurt your feelings, but I know all about it." Evidently she thought I was too full of emotion. Anyway she seemed to get less kick out of kissing her fingers at me. But do you think Her Dizziness caught on? Not a bit of it!

Well, I saw it was going to be up to me to bring us out of it, but at that minute I was so sore I didn't much care whether we came through all right or not. But I reached under my seat and made a grab for that coat. I had to turn my head to see where I was reaching, and this caused me to miss it about two inches, because when I turned my head it shortened my reach. I tried this two or three times and then gave it up as hopeless.

I saw I was going to have to "fish blind" for that coat if I got it, so I kept my eyes in front of me and went after it. I got—a leg.

That loony girl decided right off that I was trying to get fresh with her! She went for me under the seat with both hands and began pushing my hands away, hitting them and kicking and scratching until she barked my knuckles until it felt like she had crippled me for life, but I fought for that coat. It

was either that or us. Everytime I would get it, she'd break my hold, but finally I got a firm grip of it, after I had given her a belt across the hands that gave me a chance to break through.

Then she discovered what it was all about and began trying to help me. But I didn't need any help then. I gave the coat such a yank that it ripped right out of the pulley, then I righted the plane and hunted a landing place. I was boiling over —seeing red.

I found one. We were then about four miles from Daytona, near New Smyrna, I think. Getting down to the ground again didn't sweeten my temper a bit.

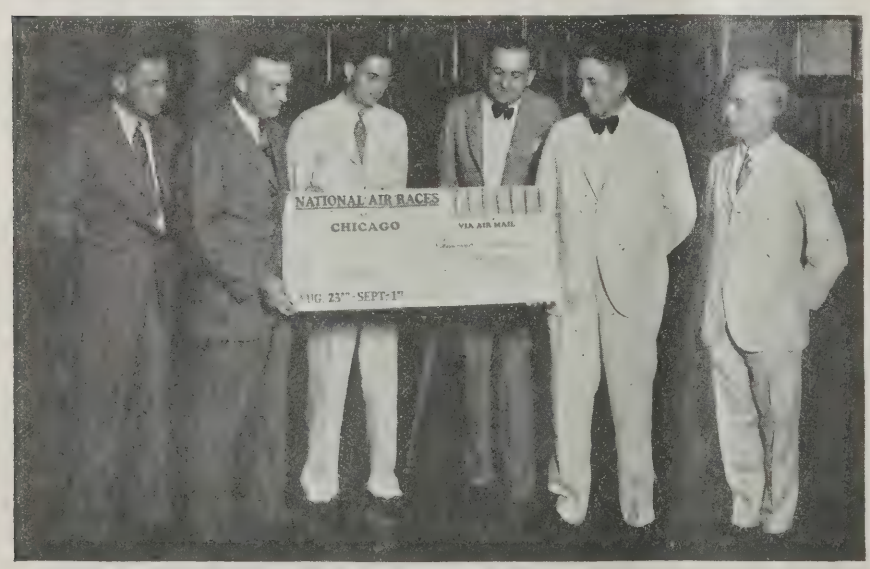
When I finally got enough steam blown off, so I could talk, I read her the riot act, and then—

"Look here, miss," I told her, "I don't know whether you are the first woman to walk home from a plane ride or not, but I don't mind telling you that you are going to have that experience. As it's getting pretty late, I guess you'd better get started."

Do you blame me? Maybe you do and maybe you don't, but however other folks feel about it, I haven't had a guilty conscience yet. Anyway, I'm telling you that this business of giving free rides always gets you into trouble. I've stopped it.

THE above photograph of William S. Brock and Edward F. Schlee was snapped just after they landed at the Jacksonville municipal airport, after crossing the continent in 31 hours and 50 minutes, taking two transcontinental speed records. They made the flight from Jacksonville Beach to San Diego, Calif., and return. They nearly came to grief when their plane gave out of gas over the airport and nosed into a fence when they overshot the field.

Texas gubernatorial candidates are using airplanes to cover the vast distances in the Lone Star State that have always complicated comprehensive campaigning. Among the fliers are Paul Lover, wet candidate for governor, and C. C. Small, author of several famous land bills. Both men have made long hops by air.



Governor Parnell, of Arkansas, second from the right, receiving an invitation from the Chicago Chamber of Commerce to attend the National Air Races at the Curtiss-Wright-Reynolds airport, August 23 to September 1 inclusive. The invitation, a replica of which was sent to governors of each of the 48 states, was signed by over 1500 Chicago high school students and cost over three dollars to send by air mail. Morehead Wright, N. A. A. president in Little Rock, is on the extreme right. Others in the picture are, from left to right: Felix Smart, N. A. A. governor for Arkansas; A. E. Townsend, postmaster; Charles M. Taylor, executive vice-president, Little Rock N. A. A. chapter, and Major J. Carroll Cone, former governor-at-large for N. A. A.

New Commanding Officer of A. C. Training Center

BRIGADIER GENERAL Charles H. Danforth, who on July 17 assumed command of the Air Corps Training Center, Duncan Field, Texas, is a soldier of the old school of experience and hard knocks.

General Danforth's military career began in June, 1898, when he enlisted in the 4th United States Volunteer Infantry. Early in 1899, that regiment was sent to occupy Manzanillo

General Charles H. Danforth

(Cuba). General Danforth was appointed a lieutenant in December, 1898, and the following summer he sailed for the Philippines with the 31st United States Volunteer Infantry, which regiment was selected to hold several points in Mindanao, where it served until 1901. Its work was largely among the Moros and the hillmen on that island, then poorly mapped and little known, and the men trusted in the Lord and kept their ammunition dry.

Commissioned in the Regular Army in 1901, General Danforth became a captain ten years later, and was appointed lieutenant colonel of the 2nd Minnesota Infantry in 1916. During the World War he held the grade of lieutenant colonel in the Regular establishment, and was transferred to the Army Air Service in 1920. He was advanced to a colonelcy in the Army Air Corps in 1928. Having graduated from the Air Service Pilots School in 1921, he finished a bombardment course the same year. He is also a graduate of the Infantry and Cavalry Schools.

As commander of the Air Corps Training Center, he will have charge of all training activity at the three fields which constitute the Center.

General News of THE AVIATION INDUSTRY

Mid-Summer Air Meet Staged at Tampa

SOMETHING new in air meets, designed especially for amateur pilots and private airplane owners was successfully sponsored by the Tampa Chapter, National Aeronautical Association, on July 17, when representatives of 15 surrounding communities took part in a program of eight events.

Officially entitled the "First Annual South Florida Mid-Summer Air Meet," the tournament brought 20 airplanes to Tampa, ranging from the most modern speedsters to a brilliantly bedecked Jenny, proudly bearing the pre-war identification number of "383." More than 5,000 spectators were on hand.

While it was, primarily, an amateur meet, there were several "open" events in which professional pilots participated. The most interesting of these was a "pro-amateur" relay race around a 12-mile course, in which four teams of eight pilots took part. It was easily won by Jerome A. Waterman, president of the Tampa NAA chapter (amateur) who was teamed with Hugh L. Woods, chief pilot of the McMullen Airways Corporation, representing the profession. They flew Waterman's J-5 Travel Air Speedwing. The crowd got a big kick out of the plane-changing between laps.

To maintain the amateur standing of most of the participants, cups and merchandise were awarded, while professionals only shared in the $200 cash prizes.

A feature of the meet was a "hangar lunch," served at noon to more than 200 persons, under the direction of I. G. Hedrick, manager of the Tampa Municipal Airport.

Prize-winners and events follow:

Best-appearing airplane: Stinson-Junior, owned by P. J. Sones, of Haines City.

Best-dressed pilot: Bob Nagle, Clearwater, pilot of a Bellanca, owned by Donald Boebling.

Prettiest girl coming by air: Mrs. Vera Gammage, 17, Arcadia, whose husband entered a Lincoln-Page in many of the events.

15-mile free-for-all race: (Professional) first, Bob Nagle, Clearwater, Bellanca-300; second, Hugh L. Woods, Tampa, Travel Air-165. (Amateur) first, Bob Elsberry, Wimauma, Great Lakes-Cirrus; second, Griffin Davis, Tampa, Travel Air-90.

15-mile amateur race, more than 100 hp: first, J. A. Waterman, Travel Air-165; second, Bob Elsberry, Great Lakes-Cirrus.

15-mile amateur race, less than 100 hp: first, Bob Elsberry, Great Lakes-Cirrus; second, Frank Farnandez, Tampa, Waco-OX; third, Griffin D. Davis, Travel Air-OX.

15-mile amateur race (OX motors only): first, Frank Fernandez, Tampa, Waco-10; second, Paul Grassfield, Jacksonville, Travel Air; third, Griffin D. Davis, Travel Air.

Spot landing contest (dead stick for professionals). Professionals: first, L. F. Beard, St. Petersburg; second, Hugh L. Woods, Tampa; third, R. H. Mitchell, Ft. Myers. Amateurs: first, Carl Roberts, Ft. Myers; second, Griffin D. Davis, Tampa; third, Clarence McArthur, Plant City.

15-mile pro-amateur relay race: first, Speedwing Travel Air team, J. A. Waterman (amateur) and Hugh L. Woods (pro); second, Waco-10 team, Frank Fernandez, (amateur) and Clarence McArthur (amateur); third: Travel Air team, Griffin D. Davis, (amateur) and Paul R. Wilkinson (pro.)

Those attending the meet were so impressed with the initial undertaking that it was agreed to stage monthly neighborhood air tours throughout Florida during the summer and fall.

New Radio Communication Stations Planned

Twenty-two radio communication stations will be established by the airways division of the Aeronautics Branch during the current fiscal year.

These twenty stations will be located as follows: DuBois and Great Falls, on the Salt Lake City-Great Falls airway.

Yuma, Tucson, El Paso, Wing, Sweetwater, Shreveport, Jackson, Miss., and Birmingham, on the Southern Transcontinental Airway between San Diego, Calif., and Birmingham, Ala.

Pittsburgh, on the St. Louis-New York airway.

Little Rock, Memphis and Nashville on the proposed Fort Worth-Nashville airway.

Las Vegas and Milford, on the Los Angeles-Salt Lake City airway; and at Jackson, Mich., Jacksonville, Fla., New Orleans, La., and Cincinnati, Ohio.

When these twenty new stations are completed, there will be 65 airways radio stations broadcasting weather information on an hourly basis to pilots in flight.

Special awards in Florida's first amateur airmeet, held at Tampa on July 17, included a cup to the prettiest girl coming by air, which was voted to Mrs. Vera Gammage (center) wife of a young Arcadia flier. Bob Nagle, left, Clearwater, is holding a neatly packed wrist watch, for his distinction of being the best dressed pilot. On the right, P. J. Sones, of Haines City, has visible evidence that his Stinson-Junior, in the background, was adjudged the best appearing airplane.

Air Tour Planned by Oklahoma Chamber

AFTER six months of intensive planning, the biggest air tour promotion ever attempted by any state or national group has been completed by the Oklahoma State Chamber of Commerce, according to W. B. Estes, secretary of the chamber.

The tour will be a national affair with ships from all over the country to be entered in the tour, which will go into 36 states. More than 30 senators and 100 national representatives in Congress have been invited to attend the tour in specially provided ships. Present plans now call for the visitation of the 36 states with the governors of the states included in the passenger list on the entire tour. Stops will be made at all state capitals and at major air centers throughout the territory covered. Twenty manufacturers have already signified their intention of entering ships in the tour.

According to Estes, the tour is being conducted to promote general and official acceptance of the airplane as a safe, practical, speedy and economical means of transportation, to promote a system of state and national aviation laws and to standardize airway markings.

Date of the tour will be set later, but will probably start late in September from Oklahoma City and will end 16 days later in Washington, D. C.

Three Classes of Glider Pilots' Licenses

Three classes of glider pilot licenses—student, non-commercial and commercial, are provided for under amendments to the Air Commerce Regulations announced recently by Clarence M. Young, assistant secretary of commerce for aeronautics.

Student permits authorize the holder to receive instruction and to solo licensed gliders while under the jurisdiction of a licensed glider pilot. No physical or written examination will be required for this class of permit. The non-commercial glider license will apply to the group that is desirous of operating gliders only for sport and pleasure. This license parallels, to a degree, the private airplane pilot license. The commercial glider pilot license will be issued to all applicants physically qualified, who successfully accomplish the flight tests involved. The applicants are required to pass a physical examination the same as is now required for a private airplane pilot's licence. There is no written examination.

After many weeks of study in the matter of licensing gliders, a conference of all the departments supervising and engineering inspectors was called at Washington, where the rules were formulated.

Col. W. G. Schauffler, Jr., vice-president and general manager of Interstate Airlines, Inc., who has been recuperating the past several weeks following a glider crash in which he sustained a compound fracture of the left arm, left Nashville on July 8 for a two months' leave of absence to fully recover from his injury. O. T. Ridley, former field manager of Tennessee's Sky Harbor and assistant to Colonel Schauffler, has been appointed acting general manager in the vice-president's absence.

S. A. T. Pilots Dressed Up for Summer Flights

Something like a naval officer—costume white as the fleecy clouds, with a touch of black and gold on the cap and a blue cravat. That is the Southern Air Transport pilot of today, clad in the new summer uniform, which makes the weather beaten helmet and slouch leather jacket of the air field look like an anachronism.

S. A. T. pilots are donning the new white uniforms in place of the blue-gray worn since the inauguration of passenger lines a little more than a year ago. Trim blue serge, it is rumored, will be the fall and winter fashion for the passenger pilots. The "whites" are drill.

Reorganization of Berliner Joyce Corporation

REORGANIZATION of the Berliner-Joyce Aircraft Corporation, of Baltimore, Md., under the control of the North American Aviation Corporation, of New York, was completed when officials of the new company formed under the merger plan visited the plant. The new company will be known as the B-J Aircraft Corporation.

Thomas A. Morgan, president of the Sperry Gyroscope Company, one of the subsidiaries of the North American Aviation Corporation, will be president of the new concern. Thomas B. Doe, president of the Eastern Air Transport, another North American subsidiary, which operates the air mail from New York through Baltimore and other cities to Atlanta, will be vice-president; Temple N. Joyce, of Baltimore, one of the organizers and vice-president in charge of sales of the Berlinger-Joyce Corporation, becomes vice-president and general manager of the new corporation. Henry A. Berliner, vice-president in charge of production of the Berliner-Joyce Aircraft Corporation, becomes a director of the new company.

Other directors of the new corporation will be John Sanderson, treasurer of the North American Aviation Corporation; J. Cheever Cowden, vice-president of the Bancamerica-Blair Corporation; Cyril McNear, also of the Bancamerica-Blair Corporation; Townsend Scott, Jr., of the firm of Townsend Scott & Co., bankers, of Baltimore; Harry Hotchkiss and William Crawford, attorneys of New York, and another Baltimorean yet to be named. Also Messrs. Morgan, Doe and Joyce. All of the new directors, with the exception of Messrs. Joyce, Berliner and Scott, are directors of the North American Aviation Corporation.

Two New Spartan Dealers in Texas

Two new Texas agencies for the Spartan Aircraft Company, of Tulsa, were established last week, according to Wilton M. Briney, Spartan sales manager.

W. W. Martin, of Fort Worth, and M. V. McDermott, of Waco, both visited Tulsa during the week, inspected the Spartan hangar, factory and school, purchased open Spartan biplanes and returned to their respective homes in the ships to open sales agencies.

Preparations Completed for National Air Races

APPROACH of the opening date for the 1930 National Air Races at Chicago finds the air-minded in every part of the country with their attention focused on the windy city—some with a view to annexing a portion of the $100,000 in cash prizes and trophies and others to see what innovations in commercial airplanes and speed have been produced since the races at Cleveland last year.

The contest committee report themselves as well pleased with the public enthusiasm being displayed and indications point to a record-breaking crowd for the ten days from August 23 to September 1, inclusive. The Curtiss-Wright-Reynolds airport, where the races will be held, has been under preparation for the past three months and is in holiday attire, awaiting the arrival of the derby planes from all corners of the United States to officially open the 1930 air classic.

The starting point for the seven air derbies which will inaugurate the race were announced recently by Major R. W. Schroeder, director of contests, and Major Luke Christopher, of the National Aeronautic Association.

The Eastern Women's Air Derby, which will inaugurate the event, will start from Washington, D. C. Entries are limited to planes of 500 cubic inch piston displacement. From the National Capitol, the girl flyers will wing southward to Atlanta, thence westward skirting the Gulf of Mexico and northward up the Mississippi River Valley.

Seattle, Washington, has been selected as the starting point for the Men's Western Derby and Miami, Florida, for the eastern derby. Entries in these two events are limited to planes of 800 cubic inch piston displacement.

Major Luke Christopher, contest secretary

El Paso, Texas, will be the take-off point from the Southwest for men flying planes of 500 cubic inch piston displacement, while easterners flying planes in the same class will leave Boston, Mass.

Los Angeles will be the starting point of the non-stop derby, which will offer prizes totaling $12,000. There are no limitations of power for this event.

The Women's Western Derby for planes of 800 cubic inch piston displacement will take off from Long Beach, Calif. Control points have been designated at San Diego, Phoenix, Tucson, Douglas, El Paso, Roswell, Lubbock, Amarillo, Wichita, Kansas City, St. Joseph, Des Moines, Madison and Elgin.

Control points for derbies have been established at airports a short distance from the Curtiss-Wright-Reynolds field. The reason for establishing these control points is to permit the racers to finish in their proper order. Hitherfore, the derby finishers have been strung out over a long period of time, and straggled in at random to the confusion of spectators. This year they will all cross the final finish line within the space of a few minutes, in the order of their standing for the race.

Contesting planes in the Men's Atlantic Air Derby of approximately 200 horsepower will take off from Miami on August 20, arriving at Tampa for luncheon at 3 o'clock in the afternoon. From Tampa the racers will fly to Jacksonville where they will remain overnight. On the 21st, the planes will take off for Jacksonville at 10 o'clock, flying to Macon, Georgia, where luncheon will be served at 3 o'clock. The last stop of the day will bring the flyers to Augusta, where they will remain overnight.

On the 22nd they will leave Augusta and fly to Murfreesboro, Tenn., where luncheon will be served at 2:30 o'clock. On the 3rd the racers will fly from Cincinnati to Joliet, Ill., the final control point. Here they will have lunch at 2:30 o'clock and fly to the Curtis-Wright-Reynolds

The Curtiss-Wright-Reynolds Airport in readiness for the races. Photo by Nat. Photograph and Adv. Co.

airport from the finish line in connection with the opening exercises of the National Air Races. The distance is 1,545 miles and prize money totals $2,500.

In the two women's derbies inaugurating the meet, the derby starting from the west coast will be limited to planes of approximately 200 horsepower and the derby down the Atlantic Seaboard, westward skirting the Gulf of Mexico and thence up the Mississippi Valley will be limited to planes of approximately 100 horsepower.

Indications are that competition in the 44 events scheduled during the ten days this year will be greater than ever before. The speed races for planes of unlimited horsepower and piston displacement are expected to bring many innovations in racing aircraft to the Curtiss-Wright-Reynolds airport. The races this year will be keenly watched by the aircraft manufacturers, many of whom have prepared specially designed planes for one or more of the events.

The event this year will also bring more foreign visitors to Chicago than have ever attended the races heretofore.

The huge grandstand with a seating capacity of many thousands is ready. A large cafeteria seating 15,000 people will be in operation throughout the ten days.

Plans for National Airport Convention in Tulsa

Plans are now being laid by airport officials and aviation leaders in Tulsa, Oklahoma, for the national convention of the airport division of the Aeronautical Chamber of Commerce to be held in Tulsa, next April. H. C. Bennett, representative of the National Aeronautical Chamber of Commerce, attended the initial conference of Tulsa planners held in the Mayo hotel July 19.

More than 500 airport managers and officials from all over the country have signified their intention of attending the meeting in 1931, Bennett told the local committee. The gathering will be a three-day convention with sessions at the Tulsa municipal airport. Charles Short, manager of the Tulsa port, said that the new $250,000 administration building would be completed in time for the convention. Hundreds of manufacturers of planes and equipment from all parts of the country will have exhibits in the four hangars on the Tulsa field. Leaders in the planning of the convention are, W. G. Skelly, Cyrus Avery, C. A. Border, C. L. Dewey, Charles Short, William Barnwell, Richard Boutelle, Fred Whittaker, Ralph H. Berry, L. V. Kerber and Rex Beisel.

Mrs. Phoebe Omlie, of Memphis, christening the official plane of the National Air Race Corporation at Chicago

Aeronautical Interests Consolidated

The aeronautical activities of the American Gas Accumulator Company have been consolidated into one department. In addition to distributing its own products, the new division will be exclusive distributor for the B. B. T. Corporation of America and for the airway and airport lighting equipment made by the Sperry Gyroscope Company.

The consolidation of interests is expected to materially advance the dioptric or Fresnel system of airport floodlighting. Additional manufacturing facilities have been gained through the merger by B. B. T.

L. C. Simpson, formerly manager of the airport equipment sales department of the Curtiss-Wright Flying Service, has been appointed sales manager of this new activity.

Baltimore Aviation Schools Increase Facilities

So interested in aviation has the youth of Baltimore become that every facility for teaching aviation courses has been overcrowded, according to Wilmer A. Dehuff, principal of the Baltimore Polytechnic Institute and of the Market Place School of the Maryland Institute. The demand for instruction in the aeronautical courses at the latter institution has necessitated the erection of additional classrooms and improvement of existing ones. More than $30,000 is being used for this purpose.

At the Baltimore Polytechnic Institute, aeronautics has become a required course instead of an elective one, because the majority of students elected it when the course was first offered at the school. As a result of the aeronautics course, according to Mr. Dehuff, students are showing more and more interest in aviation engineering, and not a few have continued their studies, looking not only to flying but to aviation design as well.

The Polytechnic course includes much of the work embraced in ground school courses, and varies from the courses taught at the Maryland Institute Market Place School, in that the latter avoid the theory which forms the mainstay of the former and are devoted principally to practical work.

The city government of Tampa is giving consideration to the leasing of the 240-acre municipal airport to the McMullen Aircraft Company, as base operator. The plan under advisement is somewhat similar to that by which the McMullen organization was appointed operator of the new riverside airport at South Jacksonville, which field is less than 10 minutes by street car from the heart of the north Florida metropolis.

Florida Aviation Bureau Starts Big Program

EMPLOYING "Florida First In Aviation" as their slogan and with five main objectives in the announced program for the year, aviation forces of Florida, under the supervision of Frank Redd of Sarasota, chairman of the Florida State Chamber of Commerce Aviation Bureau, conducted an intensive statewide drive for membership during the week of July 14-19.

The primary purpose of the campaign was to establish the recently organized state aviation bureau upon a sound financial basis and to gather together in an active group citizens of the state who are interested in the aeronautical progress of Florida. While actual figures on the results of the campaign are not now available, leaders in the drive said it had been eminently satisfactory.

Support of the organization was mainly sought in order that projects passed upon at the spring conference held recently in Tampa might be supported efficiently. These are seven in number and include the passage of proper legislation, aeronautical research, establishment of intermediate landing fields, marking of towns and highways, publication of an air map, holding an airplane model contest of state wide scope and the compiling of facts and statistics for the information of the general public, not only in Florida but throughout the nation.

More than a thousand enthusiastic workers took the field during the campaign, and advance reports of the results indicate that the membership goal of 5,000 was passed with a comfortable margin. Each member enrolled during the drive is a charter member of the organization and was issued a silver pin in the form of aviator's wings, and bearing the motto superimposed upon it, "Florida First."

One of the major projects worked out by a special committee headed by Fred Blair of St. Petersburg, and adopted by the bureau calls for the location of a landing field in each county of the state before 1931. There are 67 counties, and under the plan, Florida would have an intermediate landing field for approximately every 25 miles a pilot flies in any direction.

This objective is to be accomplished by laying out eight aeronautical districts in the state, each in charge of a district representative of the bureau. By preliminary plans, the county seats will be chosen as the location for the fields. Should the project succeed, the state will be given a nucleus for one of the greatest aviation service systems in the country, according to Mr. Redd.

Paul E. Grassfield, director of the bureau, personally conducted the state-wide campaign as field representative, flying to the various portions of the state to urge on the activities.

The organization of the bureau is simple and is calculated to operate with freedom from the hindrance of red tape and other official delays. Under the direction of Mr. Redd is a governing board which cares for the details of the work. An executive is responsible to the governing board and to Mr. Redd as chairman of the aviation committee. The bureau itself is an authorized part of the Florida State Chamber of Commerce, and is answerable to the parent body for its activities.

Maryland Now Has Flying Secretary of State

Maryland now boasts a flying Secretary of State. David C. Winebrenner 3rd, who holds that office, now flies almost as frequently as he uses other modes of travel. During the past two months he has made both long and short hops, including five business trips from Baltimore to Frederick, Md., to Atlantic City, and to Washington, D. C. Other flights have been to St. Louis, Milwaukee and Pittsburgh. The Curtiss-Wright Flying Service planes have been used in these flights.

Richard C. Gazley and Stanley S. LaSha, consulting aeronautical engineers of Washington, D. C., have been appointed chief and assistant chief respectively of the Engineering Section of the Aeronautics Branch. Mr. Gazley succeeds Kenneth M. Lane and Mr. LaSha succeeds Earl C. Friel, both of whom have resigned.

Tampa's first Glider Club got into action in June, with the arrival of an Alexander primary glider at the municipal Airport. Automobile power is used to tow it over the grassy terrain. A number of glider enthusiasts have been developed. T. C. Kitchens, of Tampa, is president and manager of the club, and Ira C. Ledbetter, 19-year old wing-designer, is test pilot.

Sanders Made Operations Manager for Two Lines

Operations of Interstate Airlines and Gulf Coast Airways at Candler Field, Atlanta, are now being carried on from the Gulf Coast Airways hangar under the direction of Lee Sanders, division manager for Gulf Coast Airways.

The consolidation of the two Candler Field bases of the two air mail lines was effected early in July when C. R. Smith, vice-president and general manager of Southern Air Transport, and Tom Ridley, acting general manager of Interstate Airlines, visited Candler Field. Both lines are divisions of the American Airways, Inc.

Lee Sanders' appointment as operations manager for the two lines at Candler Field became effective July 10.

Stinson Reports Record Six Months' Sales

The Stinson Aircraft Corporation built and sold more planes in the first six months of 1930 than during the entire year of 1929, according to a recent statement issued by William A. Mara, vice-president.

During the first six months of 1930 the company built and sold 130 cabin planes as compared with 120 for the whole of 1929. The factory was in production only five of the six months of 1930, due to extensive remodeling of the old plant in January.

The Aviation Building under construction in Fort Worth, Texas, was scheduled to be ready for occupancy on August 1 instead of September 1, according to an announcement by H. Grady Barrett, president of the Aviation Building Corporation. Grady Barrett is a brother of A. P. Barrett, president of Southern Air Transport, whose headquarters office will be lodged in the new structure.

Regular Sunday aerial programs have been inaugurated by Parks Air College, East St. Louis, Mo. A fleet of planes from the college fly over the business district in the morning and in the afternoon a stunt program consisting of parachute jumping, glider exhibitions, dead stick landing contests, wing walking and other aerial stunts is put on to amuse visitors at the field.

Three Months Violations of Air Regulations

The Aeronautics Branch of the Department of Commerce dealt with 177 violations of the Air Commerce Regulations during the second quarter of 1930. The total violations of the regulations for this period represented an increase of 55 over the first three months of 1930.

Fines in the amount of $900 were assessed against and collected from 53 persons, and penalties in the form of 20 rereprimands, 63 suspensions of the Department of Commerce licenses, 12 revocations and 5 denials of licenses, were meted out for the violations. In 24 cases, evidence was produced which justified dismissal.

The list of violations was led by acrobatics and low flying. There were 32 violations of the acrobatic provisions and 31 of the low flying rule. Other specific violations were: Unlicensed pilot flying licensed plane, 15; flying without navigation lights, 4; and flying without identification numbers on planes, 3. Miscellaneous offenses numbered 92. Twenty-seven cases are still pending.

Three state departments of Alabama—military, prison and agriculture—are cooperating in dusting the state's 2,000 acres of cotton planted at Moffett Prison Farm. The dusting being done by Captain John Donalson, of the 106 Observation Squadron, Robert Field. This marks the first time that aerial warfare against the boll weevil has been waged in Alabama.

C. E. Hall, owner of a Lockheed-Vega ship in Oklahoma City, recently announced that an attempt would be made by one of his pilots to break the transcontinental air record now held by Col. Charles A. Lindbergh. Hall is a member of the firm of Hall and Briscoe, oil operators and state distributors for the Lockheed planes. The attempt will be made after the national air races.

Heath Offers Sliding Scale of Discounts

The Heath Aircraft Corporation of Chicago, Ill., is now offering attractive contracts to dealers on the standard agency basis.

Purchase of one Heath Super Parasol at the regular price of $975 entitles the dealer to sell this ship in his home territory and take advantage of the following discounts: On the first plane, no discount; second plane, 15 per cent from list price; third plane, 20 per cent from list price; fourth plane, 25 per cent from list price; fifth and succeeding planes, 30 per cent from list.

The Heath Super Parasol sells at $975, ready to fly away at Chicago, and the above discounts apply on this price.

Frakes to Represent Curtiss-Wright

F. F. Frakes, formerly representative of the Interstate Airlines, Inc., Sky Harbor, Tenn., has been appointed sales representative for the Curtiss-Wright Corporation. In addition to the full line of Curtiss-Wright planes and parts, the company will sponsor flying clubs under Mr. Frakes' directions. These clubs make it possible for from ten to thirty persons to share expenses of flying instructions so each can get a pilot's license for approximately half of the regular school tuition. Then, if a plane is purchased, about half of this is refunded.

The clubs will use McConnell Field, Nashville, Tenn., and Mr. Frakes will maintain an office in the Hermitage Hotel.

Aviation Corporation Head Visits Nashville

F. G. Coburn of New York, president of the Aviation Corporation of Delaware, and John Paul Riddle, vice-president of the Embry-Riddle group of companies, which is owned also by the Aviation Corporation, visited Nashville, Tenn., recently in the interest of the addition of passenger service to the Chicago-Atlanta air mail route. (C.A.M.30). They were also collecting data on the proposed New York-Louisville-Nashville-Dallas air route which they expect to open as soon as emergency fields, radio beacons and radio reporting service, weather bureaus, etc., are established along the proposed routes. The information obtained by Mr. Coburn while in Nashville will be placed before the Postmaster-General for his consideration.

L. H. Luckey, formerly operations manager for Curtiss-Wright Flying Service, Dallas, has been employed as chief instructor for the Dallas Aviation School, Hangar No. 7, Love Field.

Open House Brings Crowds to Glen L. Martin Plant

More than 10,000 persons visited the Glenn L. Martin Company plant, in Baltimore, Md., on the occasion of its open house celebration, which marked the completion of the first flying boat built in the plant. The machine is the first of fifty-five patrol boats to be built by the Martin plant for the Navy this year.

The first of the new Chevrolet motors constructed at the Glenn L. Martin plant was exhibited during this celebration and flown in a small monoplane. The motor is a four-cylinder, inverted type capable of developing 100-horsepower. It was designed by Louis Chevrolet, motor designer and automobile racer.

The visitors were taken on a predetermined route through the entire plant, allowing them to see practically every step in the manufacturing of parts entering into the aircraft, and also the minor and final assembly of the planes. The visitors were entertained by flights of a number of navy planes over the plant.

Detroit Aircraft Sales for Six Months' Period

The Detroit Aircraft Corporation reports sales and orders taken for 123 airplanes of all types during the six month period from January 1st to July 1st. Gross sales and orders taken during this period amounted to $1,648,045. Seventy-nine planes were delivered during this period, having a gross value of $631,045, leaving orders on hand on which deposits have been placed for 44 planes having a gross value of $1,017,000. Dealer commitments amounted to $1,600,000 additional on July 1st.

Over $1,000,000 worth of unfilled orders are on hand, and increased production schedules are in effect at all plants, it is reported.

Principal airport dedications in the state of Oklahoma for July were: July 4, Ponca City; July 13, Enid; July 20, Miami; and July 25, Blackwell.

E. G. (Swede) Rhenstrom, former operations manager for Southern Air Transport and later in the operations department of Aviation Corporation, New York, has returned to Fort Worth.

Changes in Personnel of Spartan Aircraft Co.

Wilton M. Briney, former field representative for the Spartan Aircraft Company of Tulsa, has succeeded L. R. Dooley as sales manager for the firm, Dooley having been appointed Spartan field representative for Texas.

Briney, who is an old army flier and more recently test pilot and sales manager for the Butler Aircraft Company of Kansas City, will also handle the Spartan factory's advertising, the firm's former advertising manager, J. Baxter Gardner, having resigned to accept a position with the Rogers-Gano Advertising Agency of Tulsa.

N. G. Souther, business manager for the Spartan School of Aeronautics, will direct the school's advertising program.

Fritz and Cantrell to Enter National Air Races

Larry Fritz, operations manager for the Southwest Air Fast Express, Inc., (Safeway airlines), and Bob Cantwell, chief pilot for the line, will enter the National Air Races at Chicago, flying Earle P. Halliburton's private Lockheed, "The Tester."

Cantwell won the Class "C" cross-country flight two years ago in the same ship, and since then both Fritz and Cantwell have placed it first in various speed races. The plane is now being thoroughly overhauled for the Chicago show.

Fritz plans to enter the Los Angeles-Chicago nonstop race and Cantwell will fly in several short races at Chicago, it is announced.

Airplanes were put to a new use in Oklahoma City recently when the state election board transported ballots from the state Capitol building to the various county election boards by plane. The primary election was held July 29, enabling the election board to send out ballots on the 27th and 28th, according to J. Berry King, attorney general.

Curtiss-Wright Enters Clarkesville, Tenn.

The Clarkesville Aviation Corporation, Clarkesville, Tenn., has closed a contract with the Curtiss-Wright Flying Service for the operation of two planes at the Clarksville airport, one for passenger service and the other for student training. Capt. John F. Outlaw, of the 105th Observation Squadron and manager of the Clarksville airport, will be in charge of the planes. A Curtiss-Robin cabin plane will be used for passenger service and a Command-aire for student instruction. Capt. Outlaw, who is a member of the State of Tennessee's Aeronautic Commission, will give the flying lessons for the Curtiss-Wright Company and complete courses may be taken for private pilot licenses, limited commercial and transport service.

S. A. F. E. Increase in Passenger Traffic

ACCORDING to an announcement by C. E. Fleming, general traffic manager for the Southwest Air Fast Express, Inc., during the first six months of 1930 ships of the Safeway airlines traveled 625,677 miles and carried 23,019 paid passengers, as against 934,649 miles and 25,654 passengers during the entire first year of the firm's operation. In January of this year 1,580 passengers were carried, while that number mounted to 4,999 in June. Plans are being made to add still another ship to the Tulsa-Oklahoma City run, Fleming said.

Changes in Approved Flying School Regulations

Approved civilian flying schools are now permitted to accept students for instruction without being obliged to graduate them within any time limit, Gilbert G. Budwig, Director of Air Regulaton, has announced.

These schools are now allowed to accept students on an hourly basis, and they need not necessarily be graduated.

The parts of the regulations which are being waived have required that the entire course, both ground and flight, be completed in a maximum time of four months for private school, six months for limited commercial school and 18 months for transport school.

Record Trip from Laredo to Portland, Maine

Lieutenant Yantis H. (Buck) Taylor, instructor in the advanced pursuit training school of the Army Air Corps at Kelly Field, Texas, recently flew a Standard Curtiss Hawk powered with a Curtiss D-12 engine from Laredo on the Mexican Border to Portland, Maine, at an average speed of 140 1-3 miles per hour.

No extensive preparations were made for the flight. Five stops were made along the route and Lieutenant Taylor stated that no difficulties were experienced with the exception of a slight haze over the Alleghany Mountains.

The Curtiss Hawk, in which the trip was made, was built in 1926.

Duncan A. McIntyre, owner of the McIntyre airport and flying school at Tulsa, Oklahoma, has accepted delivery of another Model F Waco training and sport plane, powered with a Warner engine, this being the fifth ship to be placed in active operation by the school. "Mac" delivered a Lycoming-powered Stinson recently, then flew to Detroit over the week-end to place orders for three more of these craft. He has already delivered four Lycoming Stinsons since taking the agency a short time ago.

The southwestern agency for the Aeronca power glider has been taken by James B. Watson, Fort Worth attorney and U. S. reserve flier. A factory representative recently had one of the powerful little ships at the municipal airport in Fort Worth and many pilots there flew it.

The last three of a contract for eighteen Great Lakes Bombers were delivered to the Navy July 12. They were flown to San Diego, California where they were placed aboard an aircraft carrier for participation in the summer maneuvers in the Pacific. The ships are suitable for torpedo and bombing service and can be used for land, water and aircraft carrier service.

The Bluegrass Flying Service, Inc., Lexington, Ky., has incorporated with capital of $5,000. Harkness Edwards, J. Owen Reynolds and Monroe Bradley are incorporators.

The Fountain Run Flying Service, Fountain Run, Ky., capital $2,000, has been chartered by H. W. Hagan, J. B. Dossey, and I. F. Pedigo.

N. A. A. Campaign to Popularize Flying

Under the leadership of the National Aeronautic Association, a campaign is being carried on to popularize flying through the organization of flying clubs. The campaign was launched early in July. H. W. Halverson, secretary of the Private Flying Club Committee is now making an extensive airplane tour for the purpose of promoting a national organization of flying clubs under the leadership of the National Aeronautic Association.

The work of the Private Flying Club Committee was made possible by a generous grant of the Guggenheim Foundation and is a non-profit-making organization.

Captain A. B. McMullen, of the McMullen Aircraft Corporation, Tampa, Florida, and B. C. Skinner, of Dunedin, president of the Florida Citrus Machinery Company, are making an extensive aerial tour over the United States. They are traveling in a new Stinson recently purchased by Mr. Skinner.

Detroit Aircraft Corporation announces the appointment of Richmond Air Transport, Richmond, Va., as dealer for DAC products.

National Aircraft Agency Formed in New York

National Aircraft Sales Corporation has been organized in New York as a national distributing

Peter Cortelyou

agency for independent aircraft manufacturers.

Among the directors, and the president of the new corporation, is Peter C. Cortelyou, son of George B. Cortelyou, president of Consolidated Gas Company, and Donald L. Pearson, a recent Williams College graduate.

On the board of directors of the newly organized concern are Colonel Harold E. Hartney, president of Aviation Business Bureau, Thomas L. Hill, president of The American Society for Promotion of Aviation, William J. Cogan, former world war flier and at present a practicing attorney of New York City, and Donald L. Pearson.

H. W. Halverson, representing the N. A. A. in promotion of flying clubs

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New airplane owners in Tampa, Florida, and vicinity are: Herbert C. Brown, Tampa, Monocoupe; P. J. Sones, Haines City, Lycoming-Stinson Junior; B. C. Skinner, Dunedin, Wasp-Stinson Junior, and Webster Little, Tarpon Springs, Waco-10.

The first planes allocated to the army air corps reserve unit at Candler Field arrived early in August. Both are Curtiss Falcons. Lieutenant Raymond R. Brown is in charge of the unit.

Charles R. Coachman, Jacksonville, Florida, has become associated with Parks Air College as one of the ground school instructors. He was formerly chief ground school instructor and assistant manager of the Garland School of Aeronautics of Tulsa, Okla.

Third Airplane Bought by Tulsa Oil Company

The Continental Oil Company, of Tulsa, Okla., recently purchased their third plane, a new Curtiss-Robin, which will immediately be placed in the service of the firm's reorganized aviation sales division. O. M. Bounds, formerly general manager for the Tulsa Aircraft Corporation, of Tulsa, who has had a wide experience in flying during the past 16 years, is manager of this branch of the Conoco concern and will pilot the plane.

The company already has a Travel Air, piloted by John E. Grimmett, and a Lockheed, piloted by Frank Hover. G. McJunken, mechanic, takes care of the planes, all of which are used in Conoco's transport and sales service.

An order for 1435 parachutes has been placed with the Irving Chute Company, Inc., by the United States Army. President George Waite, of the Irving management, also reports a contract for chutes with the government of Esthonia and its adoption of the Irving air chute as standard equipment.

H. W. Walton, a member of the training staff of the St. Louis Board of Education, has been employed by Parks Air College during the summer season as a special field representative. His duties with Parks Air College will be in the Extension Department.

The Richmond Air Transport Company, of Richmond, Va., has recently been appointed dealer by the Detroit Aircraft Corporation.

The sale of twenty-five Lycoming Stinson Juniors has been announced by Bob Smalley, general manager of the Stinson-Chicago Company, during the past three months.

The Sellers Motor Company of Jackson, Mississippi, has recently been appointed distributor for Waco planes.

An order for seven Fairchild KR-34 3-place training planes has been placed by the Mexican government, through General Juan F. Azcarte.

Latest Developments in AIRPLANES AND ACCESSORIES

Boeing's New "Monomail" Placed in Service

THE new Boeing "Monomail," a high-speed, low-wing, all-metal monoplane designed for fast transport service, has been approved by the Department of Commerce and placed in service on the Boeing Company's lines.

The approved type certificate was granted for a gross weight of 8,000 pounds. With 2300 lbs. of payload it has a high speed of 158 miles per hour and a cruising speed of 140 miles per hour.

Three mail compartments provide 220 cubic feet of space. A sister ship carries six passengers and 1100 pounds of cargo, and another arrangement is for 8 passengers and 700 pounds of cargo.

A retractible landing gear reduces parasitic drag to a minimum.

The fuselage is of semi-monocoque construction. The wing panels are construted of square or rectangular duralumin tubing trussed spars and duralumin trussed ribs covered with smooth duralumin. Longerons, longtitudinal and circumferential stiffeners and bulkheads are of duralumin square or rectanguiar tubing. Covering is of smooth duralumin.

Specifications as furnished by the manufacturer follow:

Manufactured by Boeing Airplane Company, Seattle, Washington.

Approved type number 330.

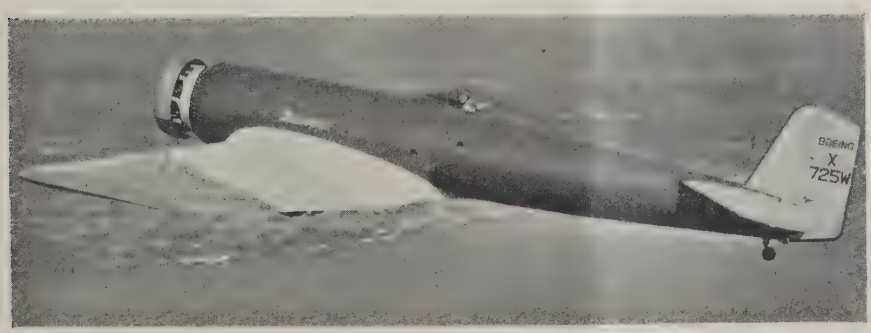
Type: High speed, large capacity transport plane.

Dimensions: Length overall, 41 ft. 2 in. Wing spars 59 ft. 1 1-2 in. Chord, at root, 148 in. Chord. at tip, 90 in.

Weights: Gross weight, 8,000 lbs. Weight empty, 4610 lbs. Useful load, 3390 lbs. Pay load. 2300 lbs.

Power plant: Pratt and Whitney, direct drive, series B Hornet rated at 575 h.p. at 1950 r.p.m.

Performance: High speed (sea level) 158 m.p.h. Landing speed, 60 m.p.h. Cruising speed, 140 m.p.h. Rate of climb 850 ft. per min. Time to 10,000 ft. (from sea level) 2 1-2 min. Service ceiling, 14,000 ft. Absolute ceiling, 16.000 ft.



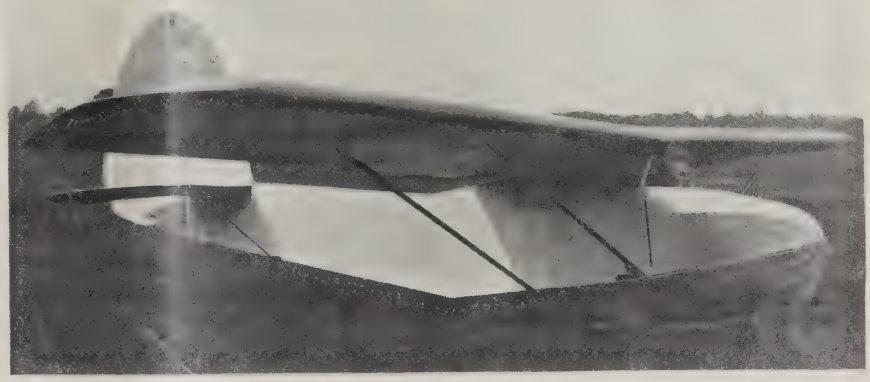
The new Boeing high speed transport monoplane. Boeing photo.

The pontoon-equipped Waco "225" has been tested and granted approved type certificate Number 311. Top speed, with pontoons, 128 m.p.h. Cruising speed, 105 m.p.h., and landing speed, 46 m.p.h. The weight empty is 1845 lbs., giving a disposable load of 965 lbs. Performance with floats was found to be practically the same as when equipped with landing gear.

Approved type certificates have been granted for the Wasp motored Ryan on pontoons and for the Ryan Brougham land plane equipped with the Wasp Junior motor.

Production Started on Eaglet Glider

Quantity production of the "Eaglet" glider in which Captain Frank Hawks made his eight-day cross country flight from San Diego to New York, has been started at Ypsilanti, Michigan, by the Franklin Glider Corporation.



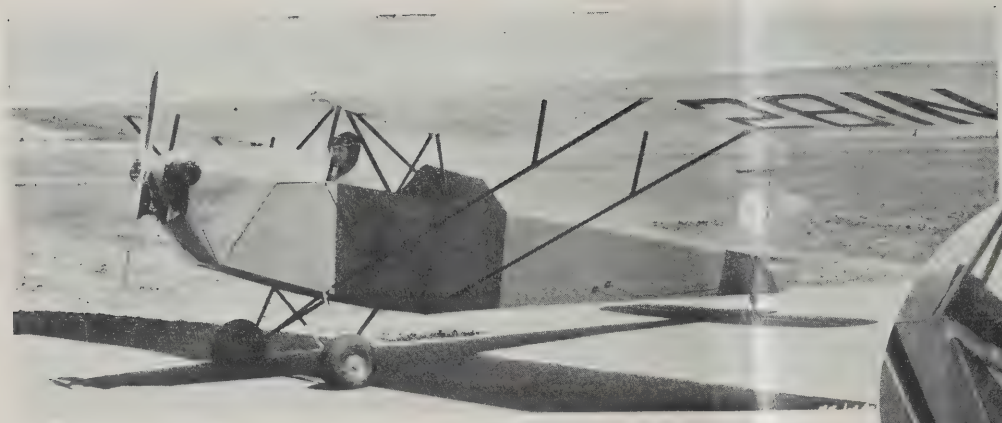
The "Eaglet," a replica of the glider in which Captain Hawks made his cross-country flight, now in production.

The "Eaglet" was designed by Professor R. E. Franklin and his brother, Wallace, especially for Hawks' cross-country flight, and the production model will embody practically all of the novel features of design and construction found in the original model.

One difference between the Eaglet and the P-S-2 is that the Eaglet is a soaring glider unsuited to primary training while the P-S-2 is suitable for towing and also primary training. The P-S-2, like the eaglet, has a single brake-equipped wheel and landing skid, a complete instrument board containing air speed, altitude, and bank indicators and release actuated from the covered cockpit for either shock cord or tow line.

To convert the Franklin P-S-2 from a primary to a secondary glider the "peanut scoop," or removable cowling, is merely put in place.

Like the Eaglet the P-S-2 is a monoplane glider with fabric covered fuselage and detachable, externally braced, wood wing. Its span is 36 feet, its length 19 feet, its aspect ratio 8 to 1, its weight 200 lbs. empty, and its gliding ratio 15 to 1. It will sell for $675 at Ypsilanti.



Two views of the American Eaglet, latest addition to the American Eable Aircraft Corporation's line.

American Eaglet Now In Production

THE American Eaglet, a new featerweight airplane, after undergoing tests at the American Eagle Aircraft Corporation factory at the Fairfax Airport, Kansas City, has been placed in production.

The production schedule calls for five planes daily.

The Eaglet is powered with a two-cylinder Cleone engine, developing 25 horsepower, and has a pay load characteristic of 175 pounds. It is a parasol type monoplane, carrying one person with the Cleone engine and two with the Szekely three cylinder, 35-horsepower engine.

In flight tests the plane was found to land within its length and to take off in not to exceed fifty feet.

With the Cleone engine, the Eaglet flies approximately 60 miles an hour. It has a gliding ratio of 12 to 1.

The fuselage is constructed of steel tubing. The Eaglet is conventional in construction and appearane having the conventional type landing gear equipped with air wheels, giving it the appearance of a full size plane.

The wings are not unusual in construction. Ribs, both web and compression, are built up of spruce and plywood.

Special attention has been given to reduction of parasitic resistance by the designers. The lower longerons are brought together midway between the tail group and the nose as a single member. The fuselage is 23 inches wide and is constructed of steel tubing, as also are the members of the tail group. A door the width of the depth of the cockpit permits easy access to pilot and passenger seats.

The usual type controls are used. A steel tubing stick and steel tubing rudder bar are used.

The control system is simple. Cables are used for control connections throughout.

Two wing struts extend down on either side to the lower longerons. These are braced additionally by two jury struts, tying into the wing structure.

The landing gear is a conventional rigid inverted V type. It is equipped with 7 by 16-inch air wheels on 4-inch hubs.

A wing tip aileron is used to provide maximum action. The horizontal stabilizer is adjustable on the ground and the fin is rigid. An unbalanced rudder is used. The elevators are conventional in design.

The wing span is 34 ft. 4 in. The overall length is 21 ft. 6 in. The height is 78 in. Control surfaces and wing area include a total of approximately 164.4 sq. ft.

The gross weight of the plane is 580 lbs. The weight of the motor is 46 lbs.; the propeller, 4 lbs.; the battery, 15 lbs.; and the fuel tank filled, 36 lbs. The weight per horsepower of the engine is less than 2 lbs. Ordinary motor gasoline and lubrication oil are mixed in an 8 to 1 ratio and carried in a single tank built into the cowling directly ahead of the pilot.

The Cleone motor gives the Eaglet a speed of approximately 60 miles an hour at 2600 revolutions a minute. It lands at approximately 15 miles an hour. The rate of climb is 350 feet per minute, and the gliding angle ratio is 12 to 1.

Low operation cost is one of the features of the American Eaglet. Figured on a basis of two gallons of fuel an hour, the cost of operation is less than 50 cents per hour or less than one cent per mile.

Powered with a Cleone engine, the Eaglet will sell for $995 and with a Szekely engine, $1395, at Kansas City.

New Motor Glider In Production

PRODUCTION has been started on a new type of motor glider by the Wing Aeronautical Company of New York. The "Dragonfly," as it is called, is powered by a 35 h. p. motor, set in a three-blade propellor, and will be manufactured at the New Jersey factory of this company.

The unique feature of the "Dragonfly," aside from its propellor blade motor, is the chrome nickel, steel tubular fuselage which serves as a tank for fixed gas fuel. Alfred Schwartz, president of the Wing Aeronautical Company, also the inventor of the motor and tank, declared that the new plane would be ready for commercial delivery in August. It will retail at $650. The planes now under construction will be used in test flights and for display. The "Dragonfly" is both plane and glider. It takes off under its own power, attains a speed of fifty miles an hour and lands at ten miles an hour.

Two of Germany's greatest plane and glider designers have been engaged to supervise production, namely, Captain Frederick A. Pippig and Lieutenant Paul Klotzsch, both war aces. Captain Pippig constructed a successful glider in 1908, while at Leipzig, and in 1909 became an assistant to Orville Wright during his first experimental flights at Bornstaedler Field, Berlin. After the war he became a specialist in glider construction and made many sustained flights. He has 3400 flying hours to his credit and is now making his home in America.

Bellanca Tandem Now Undergoing Tests

THE Bellanca Tandem, built by the Bellanca Aircraft Corporation for the Chicago Daily News is undergoing tests at the Curtiss Field near Chicago.

The plane has been in process of development for more than two years and represents radical departure from the conventional in airplane design.

Shirley J. Short, who is responsible for the Chicago newspaper's interest in the new plane, is conducting the tests.

The two Curtiss Conqueror motors installed in tandem fashion develop over 1200 horsepower. The forward engine drives a 13 foot two-bladed wooden propeller while the one in the rear has a three-bladed metal propeller of nine feet diameter. With both engines in operation, the front revolving clock-wise and the rear counter clock-wise, the torque of each is almost neutralized.

One of the chief advantages claimed for the plane is that engine repairs may be made in flight from the cabin, since flight may be sustained on either motor.

The engines are geared to drive the propellers at a slower rate than the turning of the motors. The forward engine is geared 2 to 1 while the rear engine is geared 7 to 5.

Top speed of the Tandem with both engines running at full throttle is 160 miles per hour. It has a pay load capacity of approximately 17,000 pounds and a cruising radius of 5,000 miles.

Following are some of the known performance data and specifications:

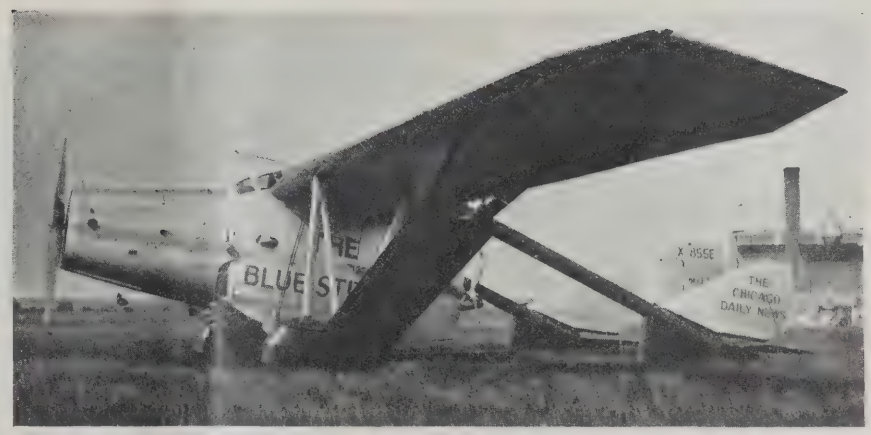
Class: Twin tandem engined, four place, cabin, land, sesquiplane.

Dimensions: Wing spread of main wing, 83.2 ft. Total wing area, 912 sq. ft. Overall length, 47 ft. 3 in. Overall height 13 ft. Cabin or fuselage length, 25 ft. Fuselage height, 10 ft. 4 in. Chord of main wing, 9 ft. Span of horizontal tail plane, 25 ft. 7 in.

Weights: Empty, 8,000 lbs. Gross weight loaded, approximately 25,000 lbs.

Power plant: Two Curtiss Conqueror water-cooled engines. Rated, 625 h. p. each. Gasoline capacity, 2,150 gals.

Performance: Speed on both motors, full throttle, 160 miles per hr. Speed on both motors, two-thirds throttle, 132.5 mi. per hr. Speed on rear engine, full throttle 114 m.p.h. Speed on forward engine, full throttle, 116 m.p.h. Climb with load of 15,500 lbs., 1,500 ft. per minute. Cruising radius, 5,000 miles.



Profile view of the Bellanca Tandem, twin engined transport plane with cruising radius of 5,000 miles. Chicago Daily News photo.

Burnelli Monoplane Undergoing Tests

Tests on the 20-passenger Burnelli all-wing monoplane are being conducted by Roger Q. Williams at Roosevelt Field, Long Island. Performance data compiled from the test flights shows so far that the UB-20 has a low landing speed of 55 miles; a cruising speed of 115-120 miles and a high speed of 140 miles per hour.

When propellers are set to turn at 1800 r.p.m., the speed is expected to be considerably increased. The engines are designed for 2100 r. p. m. The average time for take-off has been found to be eight seconds with a run of less than 150 yards. The wing span is 91 feet.

Berliner-Joyce Building Two-Seater Fighter

The Berliner-Joyce Aircraft Corporation, of Baltimore, Md., is completing an experimental pursuit plane, known as the XP-16, which is said to be the only two-seater pursuit plane in the United States. This plane, it is hoped, will be a realization of the army's dream of a pursuit plane capable of carrying two men and yet able to compete in the speed range with single-seaters. With such a plane the pilot is able to devote his entire time to flying the ship, when necessary, and it is possible to mount three machine guns instead of two. This extra man, together with the extra gun, will serve to cover up what it is now believed has been one of the weakest features of attack tactics, the inability to carry out a successful retreat.

In the Berliner-Joyce plane, with is no larger than present single-seaters, the gunner will sit in a small compartment with his back to the pilot and his head almost flush with the edge of the cockpit. From this position he will be able to fight off a plane attacking from the rear, when an overwhelming enemy force is met, or a retreat is necessary.

Frontal view of the Tandem. It has a wing span of 83 ft. Chicago Daily News photo.

Nashville Manufacturer to Build Aqua-Glider

Warren Lamb, creator of the well known "Baby Lamb" speed boats, and a member of the Lamb & Son Manufacturing Company, Nashville, is demonstrating a newly-built aqua-glider, and is to offer water gliders for sale soon. The glider has proven its capability to rise from the water with ease, and land upon the water. One remarkable feature of the Lamb acqua-glider is the small amount of towing it necessary to make it rise from the water and the small amount of speed needed for this action. The craft is towed into the air by a small outboard motor boat hardly capable of developing more than 30 miles per hour.

The glider is equipped with the same controls as are mounted in a regular motored airplane—standard "stick," foot-bar, etc.—and in accordance with the rules of water race craft, safety belt and life belt are also included in the acqua-glider's equipment.

Instead of landing gear, the acqua-glider has three pontoons attached to the bottom of the craft, the largest and main pontoon placed in the center of the glider, on which the cockpit is mounted, and two smaller pontoons placed underneath the wing on either side of the pilot's cockpit. The main pontoon is 7 feet long and 28 inches wide, the greatest depth at any place in the structure of this part of the craft is 12 inches, thus requiring hardly a foot depth of water for landing.

Stromberg-Carlson Aircraft Radio Receiver

A new and improved type of aircraft radio receiver, known as Model D, has been announced by the Stromberg-Carlson Telephone Company, of Rochester, N. Y. Specifications for the new receiver were developed by the Aircraft Radio Corporation of Boonton, N. J.

A frequency range of from 250 to 15,000 kilocycles is covered by the new model, through use of a removable coil assembly. The receiver proper measures 15 by 7 1-2 by 6 1-2 inches. The weight with tubes and shock mounting is eighteen pounds. The receiver may be operated from dynamotor or dry battery plate supply; filaments of the tubes are heated from 12 volt airplane battery.

The receiver employs four screen-grid 224 type heater tubes and one type 227 heater tube. The Model D, it is said, is particularly suitable for use with small "built-on" antennas. It will operate satisfactorily with antenna exposure as small as two feet above the fuselage.

The accompanying photograph shows the new Wright Cyclone 575 h. p. engine. The United States Navy has placed an order with the Wright Aeronautical Corporation for 272 of the new engines and the Army air corps has ordered 128, bringing the number of these engines ordered by the services to 400.

New Landing Light Has Glass Reflector

A departure from customary designs is found in the 12 inch built in landing light recently developed for Boeing mail and transport planes by

Pyle National landing light

The Pyle-National Company of Chicago. The new design is undergoing extensive tests and has already proved unusually satisfactory in performance.

The new type landing light is built into the leading edge of the wing, and the design embodies a 12 inch crystal glass reflector which is silver plated and backed up in the same way as reflectors for beacons and other larger lighting equipment.

The large size of these landing lights has been found to be a decided advantage as, with the clear, white character of the beam and the sharp cut-off, a far reaching lighting effect is produced that gives the pilot an unusually good pickup of ground detail as he comes in.

"Flying Instructor" Installed at Parks Air College

The Pardue flying instructor, a device designed to give students or those interested in flying an opportunity to familiarize themselves with the operations of a real airplane before actually flying, has been installed at Parks Air College.

This device is designed to acquaint students with the operations of elevators, ailerons, rudders, etc. The device responds to the same control movement as does a plane. The flying device was designed and constructed by John L. and P. M. Pardue to meet the demand for a foolproof, rugged flying instructor that would stand up under hard usage. In schools and colleges it is expected to fill a need as a salesroom demonstrator.

The Department of Commerce has recently purchased four Stinson Juniors for use by inspectors of the department in their visits to the various airports of the country. One of the planes is equipped with a 210 H. P. Lycoming and three with 240 H. P. Wright motors.

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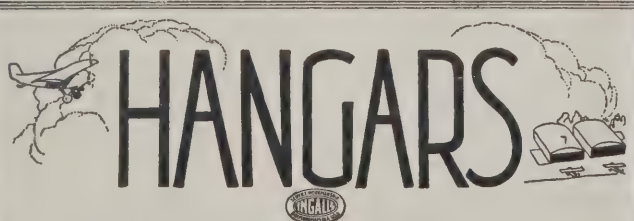

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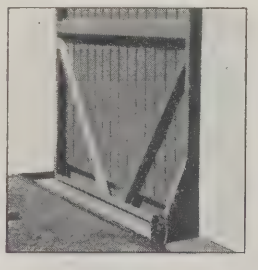

Illustration at top shows the beautiful architectural moulded panels (a type of panel available only in Harry's doors). At left is shown the plain ribbed type of panel which is optional. May we send descriptive literature telling of the many other unusual features of Harry's hangar doors?

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Brownback Tiger Approved

THE Brownback Tiger, designated as Model C-400, a light air-cooled radial engine is now in production by the Light Manufacturing and Foundry Company of Pottstown, Pa.

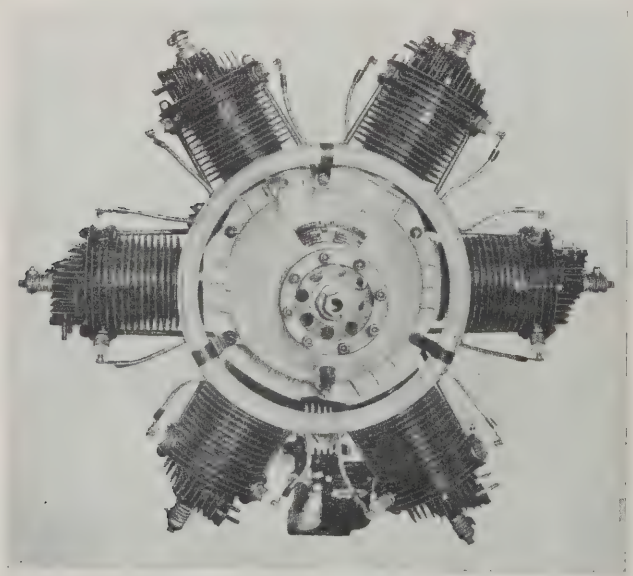
It has been granted approved type certificate No. 33 by the Department of Commerce. The commercial rating is 100 horsepower with a rating of 90 horsepower at 1700 r.p.m.

In design the Tiger engine differs from others of the same general type and power class, in having two circles of cylinders and a double-throw crankshaft. It has six cylinders which are arranged in two circles slightly offset in the direction of the crankshaft axis, the six pistons acting on two crank throws, making an angle of 180 degrees with each other. Better balance is claimed for this type of construction.

This engine is light in weight yet sturdily built and very compact, developing its horsepower at low r.p.m. accomplishing greater propeller efficiency and at the same time reducing engine strain.

The cylinders have a bore of 4.3 inches, giving a piston displacement of 397 cubic inches. The compression ratio is 4.8 to 1. The total weight of the engine, dry, with magnetos and carburetor, is 264 pounds.

Type: Six cylinder, static radial air cooled.
Horsepower: 90 at 1700 r.p.m.
Bore: 4.13 in.
Stroke: 5 in.
Piston Displacement: 397 Cubic Inches.
Compression ratio: 4.8;1.
Overall Diameter: 37 in.
Length: 29 1-4 in.
Weight dry: 234 lbs.
Propeller drive: Direct counter-clockwise facing motor.
Diameter of mounting ring: Circle 13 in.



Model C-400 Brownback Tiger

Chevrolet Engine Receives Approval Certificate

The new Chevrolet aircraft engine developed by Louis Chevrolet, engine designer and former automobile racer, successfully passed its fifty-hour test and has been given an approved type certificate by the United States Department of Commerce, it has been announced by Mr. Chevrolet. The engine is manufactured by the Chevrolet Aircraft Corporation, a subsidiary of the Glenn L. Martin Company, of Baltimore, Md. The Chevrolet concern was originally located in Indianapolis, Ind., but was moved to Baltimore several months ago following its acquisition by the Baltimore aircraft concern. It is said the engine develops greater horsepower per pound of weight than any aircraft engine of similar type in the United States.

With the passing of the tests, it is expected the company will prepare to place the engine in production for commercial use, possibly in a light plane to be developed by the Martin company. The engine, which weighs only 280 pounds, is of the inverted type, air cooled, with four cylinders in line. By inversion of the motor greater visibility is gained for the pilot.

This new motor represents some radical departures from the usual in aircraft motor design. The five-cylinder radial motor has been replaced with a four-cylinder in-line inverted engine. The four cylinders are arranged horizontally as they are in an automobile, except that the crank case is at the top of the motor, and the compression chamber, at the top of all automobile engines, is at the bottom of this one. The motor is credited with developing 100 to 110 hp at 2000 rpm.

New Aeronautical Books

Simplified Aerodynamics, 320 pages, published by the Goodheart-Wilcox Company, of Chicago, is a volume in which Professor Alexander Klemin, of the University of New York, has presented a difficult subject in a simplified manner. A study of the volume will enable the layman to grasp the fundamental theory of flight. The mechanics, physics and mathematics used in the study of aerodynamics have been reduced to their simplest form by Professor Klemin. The average person with a fair knowledge of mathematics will be able to solve many of the problems that arise with the aid of this volume. Price $3.50.

The Birth of an Industry is the title of a new booklet written by Howard Mingos, dealing with the development of Aviation in the United States from the beginning of the aircraft program upon America's entering the war until the formation of the Aeronautical Chamber of Commerce. A portion of the book is devoted to the aviation program during the war and recounts some the trouble experienced by the pioneers in the industry.

Glider Bulletin Issued by Department of Commerce

The Aeronautics Branch of the Department of Commerce has recently issued a bulletin entitled "Gliders and Gliding." The bulletin deals with the subject in elementary and general terms. The subjects covered in the bulletin include: history of gliding, purpose, types of gliders, methods of instruction and operation, safety principles to be observed, and the policy of the Aeronautics Branch with respect to licensing of gliders and glider pilots. The bulletin is identified as Aeronautics Bulletin No. 22 and will be sent free upon request.

The Aircraft Products Company of Detroit has recently completed the smallest airplane pontoons ever made. They were designed by A. Ralston Stalb for the Aeronca. They are eleven feet long and weigh 40 pounds each. They are bolted throughout, and constructed over a frame of airplane spruce and mahogany.

Approved type certificate No. 336 has been granted the Savoia-Marchetti S-56B, powered with the Kinner R440, 125-horsepower engine.

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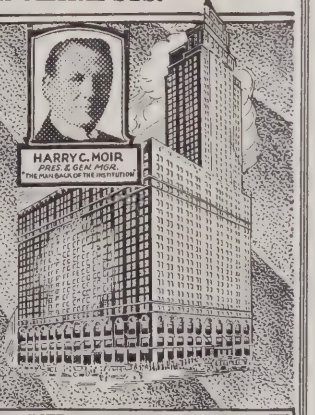

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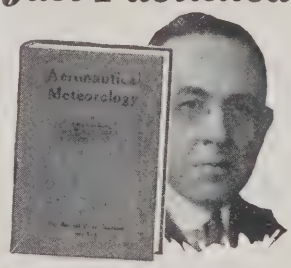

Aeronautical Meteorology

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By Willis Ray Gregg, Senior Meteorologist, Charge of Aerological Division, U. S. Weather Bureau.
Collaborators:
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F. W. Reichelderfer, Lieut., U. S. Navy; Aerological Officer, U. S. S. Los Angeles.
R. H. Weightman, Senior Meteorologist and District Forecaster, U. S. Weather Bureau, Washington, D. C.
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Advertisers' Index

A

Aero Supply Mfg. Co., Inc. *
American Aeronautical Corp. *
American Eagle Aircraft Corp. 4
Arkoma Airways, Inc. 51

C

Carolina Metal Culvert Co., Inc. *
Cessna Aircraft Co. 51
Crouse-Hinds Company 2

D

Detroit Aircraft Corp. 1

G

Gilmore Oil Co. Back Cover
Great Lakes Aircraft Corp. *

H

Harrison-Wright Co. 51
Harry Bros. Co. of La. 49
Heiss Hotel System *
Hotel Tuller 49

I

Ingalls Iron Works Co. 49
International Airports Corp. Inside Back Cover

J

Johnson Flying Service 51 and 52

M

Miami Air College *
Miami Airplane & Supply Corp. *
Morrison Hotel 51

N

New Standard Aircraft Corp. *

P

Packard Motor Car Co. Inside Front Cover
Parks Air College 1

R

Rich Associates, G. Gifford *
Ronald Press Co. 51

S

Service Steel Company 49
Sky Specialties Corp. Inside Back Cover
Southern Air Transport Co. *
Spartan School of Aeronautics 51
Stanavo Specification Board, Inc. *

T

Titanine, Inc. *

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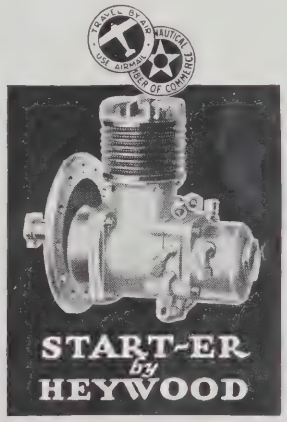

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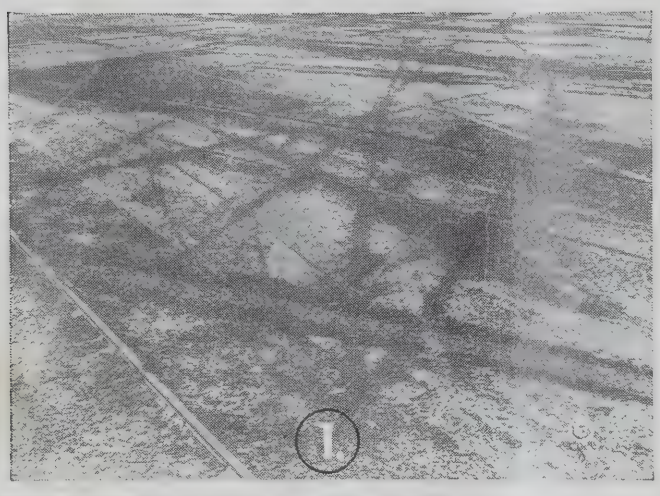

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